

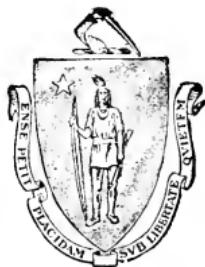
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JAN. 10, 1891

THE BEE-KEEPERS'
REVIEW
Published Monthly.

At Flint, Michigan.—One Dollar a Year

ADVERTISING RATES. Italian ~ Queens.

All advertisements will be inserted at the rate of 15 cents per line. Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:—

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 percent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

CLUBBING LIST.

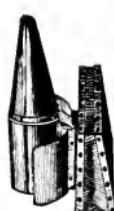
I will send the RVI w with—	
Gleanings, (\$1.00)	\$1.75.
American Bee Journal, 1.00	1.75.
Canadian Bee Journal 75	1.65.
American Bee Keeper 50	1.40.
Missouri Bee Keeper 50	1.40.
Bee Keepers' Guide 50	1.40.
Apiculturist 75	1.65.

Half Million No. 1 Sections and 350 colonies of bees must be sold. Send for catalogue. E. T. FLANAGAN, Box 783, Belleville, Ill. 12-91-61

Please mention the Review.

Imported My first importation of queens for 1892 will arrive June 1st, and I will sell them on arrival at \$3.50 each. They will be as fine queens as can be found in Italy. Orders may be sent now and queens paid for next May. W. C. FRAZIER, Atlantic, Iowa. 12-91-11

Please mention the Review.



For Simplicity and Durability,
Bingham Patent Smokers,
AND
BINGHAM & HETHERINGTON
Honey Knives,
ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker, 3½ inch,	\$2.00
Conqueror Smoker, 3	1.75
Large Smoker, 2½	1.50
Extra Smoker, 2	1.25
Plain Smoker, 2	1.00
Little Wonder Smoker, 1½ . . . . .	.65
Bingham & Hetherington Knife,	1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINGHAM & HETHERINGTON,

1-90-11.

Abronia, Michigan

6 Warranted Queens, \$5.00.

Send - for - Circular.

J. T. WILSON,
4-91-11
Pink, Kentucky.

THE CANADIAN

Bee Journal, Poultry Journal,

EDITED BY D. A. JONES. ED'D BY W.C.G. PETFR.

75 cts. a Year.

75 cts. a Year.

These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike valuable to expert or novice. Samples free. Both journals one year to one address, \$1.00 Until June 1st either Journal we will send trial trip for **6 mths 25 cts.** THE D. A. JONES CO., L'd, Beeton, Ont.

1892. 1892. 1892. 1892.

In 1892 **LEININGER BRO'S** are going to devote their entire time to raising

5-BANDED Golden Red Clover Bees.

For further particulars write for our descriptive Catalogue, which will be ready about January 15th, 1892.

LEININGER BRO'S,
12-91-11
Fort Jennings, Ohio.

ITALIAN QUEENS AND SUPPLIES FOR 1891.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,
1-88-11
Augusta, Georgia.

On Their Own Merits!

Those who have had queens from me say my

5-Banded Golden Italians

Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. **None but the very best Queens sent out;** large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00, 6 for \$5.00. Special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.
CHAS. D. DUVALL,

Spencerville, Mont. Co., Md.

12-91-11

THE REVIEW.

The distinctive features of the BEE-KEEPERS' REVIEW are those of reviewing current apicultural literature (pointing out errors and fallacies and allowing nothing of value to pass unnoticed) and the making of "special numbers"—those in which special topics are discussed by the best bee-keepers of the country. If you wish for the cream of the other journals, already skimmed and dished up, and to learn the views of the most experienced bee-keepers upon the unsolved, apicultural problems of the day, read the REVIEW. Published monthly at \$1.00 a year.

Topics Discussed in Back Numbers.

VOLUME I.—1888.

- Jan., Disturbing Bees in Winter.
- Feb., Temperature in Wintering Bees.
- Mar., Planning for Honey.
- Apr., Spring Management.
- May, Hiving Bees.
- June, Taking Away the Queen.
- July, Feeding Back.
- Aug., Apianian Exhibits at Fairs.
- Sep., The food of Bees in Winter.
- Oct., Ventilation of Bee Hives and Cellars.
- Nov., Moisture in Bee Hives and Cellars.
- Dec., Sections and their Adjustment on the Hive.

VOLUME II.—1889.

- Jan., Bee Hives.
- Feb., Mistakes in Bee-Keeping.
- Mar., Which are the Best Bees.
- Apr., Contraction of the Brood Nest.
- May, Increase, its Management and Control.
- June, Shading for Bees.
- July, The Influence of Queens upon Success.
- Aug., Irrigatory Bee-Keeping.
- Sep., Out-Door Wintering of Bees.
- Oct., Bee Conventions and Associations.
- Nov., Specialty Versus Mixed Bee-Keeping.
- Dec., What best Combines with Bee-Keeping.

As the supply of volumes I and II is quite limited, the price is five cents a copy, except for the Jan. 1889 No., which is twenty cents, there being only a few copies left. Of volume III there is a fair supply, and the price is four cents a copy. With volume IV the REVIEW was enlarged and the price raised to \$1.00. Copies of volume IV are eight cents each. Remember that each number is, in one sense, a little pamphlet giving the views of the best bee-keepers upon the topic named.

WHAT OTHERS SAY.

O. H. TOWNSEND, Alamo, Mich., writes: "I never waited here for any other paper to be read until the REVIEW commenced coming."

ARTHUR C. MILLER, Providence, R. I., writes that "there is no paper the coming of which I look forward to, or miss so much when over-due, as that of the REVIEW, and I take nearly all the bee papers published in the English language, as well as several other periodicals."

O. S. COMPTON, Goshen, Ind., writes: "The REVIEW has been worth—well, I will not attempt to place a value upon it—but this much I must say, it is looked for days before its time and no matter how many other bee papers or even letters are received at the same time, the REVIEW is opened first."

"Advanced Bee Culture" (see advertisement on another page) and the REVIEW for one year for \$1.25. Stamps taken, either U. S. or Canadian.

VOLUME III.—1890.

- Jan., Bruce Combs and their Prevention.
- Feb., Foul Brood.
- Mar., Queen Rearing and Shipping.
- Apr., The Production of Comb Honey.
- May, Raising Good Extracted Honey.
- June, Apiarian Comforts and Conveniences.
- July, From the Hive to the Honey Market.
- Aug., Marketing.
- Sep., Management after a poor Season.
- Oct., Out-Apiaries.
- Nov., Apicultural Journalism.
- Dec., Use and Abuse of Comb Foundation.

VOLUME IV.—1891.

- Jan., Buildings for the Apiary.
- Feb., Separators.
- Mar., Protection for Single-Wall Hives.
- Apr., Introducing Queens.
- May., Adulteration of Honey.
- June, " " "
- July, Bee Escapes.
- Aug., House Aparies.
- Sep., Handling Hives Instead of Frames.
- Oct., Rendering and Purifying Wax.
- Nov., Moving Bees into the Cellar.
- Dec., Remedies for Poor Seasons.

S. A. RUSSELL, New Market, Canada, says: "I am pleased with the REVIEW, as you have such a happy manner of stating practical facts without so much of this 'what may have been done, or what we might have tried if our patient had not died.'"

C. K. BIXLER, Hoyt, Iowa, writes as follows: "I think the REVIEW away ahead of any bee paper I read, and I read several. It is certainly pure and clean and free from mud-slinging; while, from a literary point of view, it stands above every other bee paper. I was glad when Dr. Miller induced you to give up that 'we.'"

When the REVIEW started I thought it was to be simply a Heddon hive circular, but I am glad to say I was mistaken. You sometimes give the hive a lift, but such action is all right if the hive is the "ne plus ultra," which I am beginning to believe."

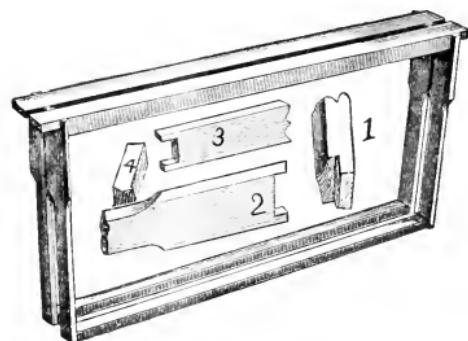
W. Z. HUTCHINSON, FLINT, MICH.

DID YOU KNOW THAT

Fixed Frames are the Rage?

Well, the question with many is, which one to adopt. After offering for sale several styles, our customers have almost uniformly elected in their orders the justly popular

HOFFMAN FRAME.



For the Langstroth, or any Hive of that size, such as the Dovetailed, they are unique, indeed the best. They are not stuck up with burr combs, are self spacing, the most rapidly hand fed, and always ready for rough handling, such as for shipping and moving to our yards. The top bar has a moulded comb guide as shown, and is 1 1/2 in. wide and 1/8 in. thick. The end bars are widened at the top, and on one side are brought to a blunt knife-edge. The bottom bar is 1/2 in. square, so the bees will build their comb down on it. Queens cannot hide between it and the comb, and it does not catch and roll over the bees in drawing the frame out of the hive. This frame costs a little more than the old style thin top bar frames, but, Oh, my, how much better! As a good frame will last a life time, get a good one. Price \$1.70 per 100; \$15.00 per 1,000.

OUR DOVETAILED HIVE,

In fact, all our hives complete, now have the New Hoffman Frame with the other inside furniture. Although the new frame is more expensive, we put up the hive combinations at the **SAME PRICE**. Speaking of the DOVETAILED HIVE, remember we were the originators of this Hive, and are the only ones who have put any substantial improvements on it. It is now our selling all our other hives put together. If you want the latest as well as those made upon some new and expensive automatic machinery on which the dovetailing is a **CLEAN CUT**, buy of us or our dealers. Send for our 32 Page Catalogue of Bee Supplies which will give full particulars. The information in it will be worth much to you.

Please mention the Review

1892.

Don't you want large, beautiful Queens, producing Bees that will just please you fully? Well, my Italians are in the lead—so my customers say. 1,048 queens sold and have heard of only two misnamed. Orders booked now and will be filled in no time. 10 per cent off on all cash orders received during January. Warranted Queen \$1.00; 6 for \$1.50. A select Breeding Queen, yellow to the tip, \$2.00. Will begin shipping May 1st.

W. H. LAWS, Lavaca, Ark.

Bee Hives, Sections, Etc.

We make the best goods and sell them cheap. Our sections are far the best in the market.

Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

G. B. LEWIS CO.,
Watertown, Wisconsin.



My Catalogue of Aparian Supplies is free; my Pamphlet, "How I Produce Comb Honey," Costs Five cts. Geo. E. Hilton, Fremont, Mich.

12-91-67

A. I. ROOT, Medina, Ohio.

\$50.00 EACH FOR

Queens is a large sum, but I feel confident that this season I shall send out many Queens producing the

SIX-BANDED ITALIAN

Bees, and I will give that sum for a Queen that produces Bees with six yellow bands. See my ad. in the Dec. REVIEW. Prices on

QUEEN BEES

Next month, or send name for Catalogue. Don't fail. Prices average lower than before. Better facilities than ever or than any other breeder. Send now to

JACOB T. TIMPE,
Grand Ledge, Mich., U.S.A.

If you are going to—

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V.

FLINT, MICHIGAN, JAN. 10, 1892.

NO. 1.

**The special topic of this issue is
Writing for the Bee Journal:**

**That of the next issue will be
The Grading of Honey.**

**Writing for the Press an Art that Must be
Learned.—The Course Necessary
for its Acquirement.**

WM. F. CLARKE.



**WRITING for
periodicals,
of whatever kind,
is an art. I am
not sure but it
ranks as one of
the fine arts. It
has been said
that a poet is
born, not made.
No one is a born
editor or journal-
istic correspond-**

ent. A native gift there must be, doubtless, but it can only be developed by down right hard work. The art is governed by three general rules: possession of ideas, knowledge of grammar, and ability to express one's self in an interesting and forcible manner. In the absence of ideas, there is nothing to say; without some knowledge of grammar, words are wanting; and unless there be some grace and force of diction,

both ideas and words fall flat. The textbook I studied in my school-boy days defined English grammar to be "the art of speaking and writing the English language with propriety." But more than propriety is needed. What we call "style" is of the greatest importance. As the value of the materials of a building, whatever their cost, depends mainly on the skill with which they are put together, so in literary architecture, it is the manner in which ideas are constructed that constitutes the main worth of a composition. A diamond has little beauty as it lies in the mine. It must be cleaned, smoothed, cut and polished by the lapidary before it is fit to sparkle on the bosom of the wearer. So, thought in the ore has little use or charm. It must be put in the mental crucible and fashioned skillfully into words and sentences by the literary artist. Writing for bee journals demands competent acquaintance with apiculture, knowledge of grammar, and a befitting style.

Every writer's personality is a kind of mould, and forms a style which is peculiarly his own. Style is like the human face. No two countenances are precisely alike. There are often striking resemblances, but notwithstanding these there is a peculiar personal identity. Variety is pleasing, provided it is variety in kinds and degrees of excellence. Variety in food is not pleasing if some of the viands are of choice and others of poor quality. It is better not to put inferior dishes on the table at all. If placed there, it will be "love's labor lost." You

say "it is evident that bee keepers are a little tired of some of the old writers." That is the "old writer's" own fault. Some of them write too much to be always interesting. There may be a choice spring at the bottom of a well, but it is not inexhaustibly copious. With too much pumping, it will get dry. Minds, like wells, need time to fill up. Dr. Miller is a pat illustration of this. When he wrote that long series of articles on "Out Apiaries," the well got pretty dry. But his recent article on the Chicago convention shows what he can do when the spring rises in freshness. As I read that admirable report, I felt that I had got the cue of the proceedings, and the gist of the whole affair. Mr. Doolittle writes too much for his own reputation. He can write a first class article, but producing so many, it is impossible that all should be A 1. It reminds me of the fable of the fox and the lioness. Mrs. Fox reproached Mrs. Lion for only bringing forth one at a birth, while she, (Mrs. Fox,) brought forth several. "You forget," was the reply, "that my one is a lion."

I do not participate in your desire to get *all* to write. It is akin to the idea that everyone should speak in a religious meeting. I consider this one of the mistakes of the age we live in. In every school there must be teachers and learners. The scholars may in time become teachers, but they must first pass through the curriculum of scholarship. For some, silence is golden. By keeping still, they might get a reputation for being wise. If the ass would keep his mouth shut he would pass for a sensible quadruped, but when he opens his mouth he can only bray. Let those write for bee and other journals who have ideas that crave utterance, can clothe them in suitable words, and are under the influence of that peculiar inspiration which belongs in common to the author, the artist, and the poet. There is an itching to write, known as the *cacoethes scribendi*, which impels many to take up the pen who are strangers to the true *aflatus*, just as many rhymesters compose doggerel verses, under the delusion that they are visited by the muses.

I do not concur in what you say by way of excusing a want of education. It is an age of books. The schoolmaster is abroad. Self-education is practicable for any one who has determination and energy sufficient for the task. As for bad penmanship, it is

very discreditable to all except such as have crippled hands. I do pity compositors who have to set type from half-illegible "copy." They are a much-abused class of people. Every person who undertakes to write for the press is in duty bound to make his writing at least fairly readable. It only needs practice to write a good, clear, legible hand. What makes a good base ball player? Practice. What makes a good painter, a good sculptor, a good musician? Practice. What makes a good short-hand writer? Practice. If a man does not exercise his arm, he develops no muscle. A gymnast was never made by twirling the thumbs, and people who permit themselves to scrawl and scribble will always be poor writers. I do not care if a man or woman has reached middle age, persistent practice will enable them to acquire a fair style of penmanship. My father, though a college graduate, was a poor writer until he had a family of children, some of whom were able to write better than he did. He could not stand that. He belonged to the old school, and believed in beating his children. So he bought an instruction book in penmanship, went to work "unbeknown" to his family, and soon acquired what we call "a nice hand." The same line of remark applies to grammar and spelling. Grammar is not an abstruse thing. Who is there, possessing any vigor of mind, who could not master one rule of syntax in an evening? The entire set might easily be learned before half the evenings of a single winter were consumed. Is not the game worth the candle? Spelling is a tougher, longer job. Still, with a fixed determination to improve, progress, though slow, will be sure, and victory will come at length. Of course, any sensible editor is willing to put valuable ideas into a presentable dress. But we should have the same pride mothers have in dressing their children, and should aspire to clothe our literary offspring ourselves in a becoming and charming manner. I am sorry to learn that, of all the correspondents to the REVIEW, only two or three send manuscript good enough to be turned over to the compositor without revision. May the little tribe increase!

It will, perhaps, be helpful to some beginner, for me to state how I learned to write for the press. As long ago as I can remember I had an ambition to write articles fit to appear in print. I set out with the determination to do my level best every time, and

to turn out nothing until it was as good as I could make it, not only as to ideas, but in penmanship, style and spelling. What laborious re-writings I had at first! But gradually, the copyings became fewer, until at length, I could do my best at one stroke. Your experience with the twins is very suggestive. I do not wish you a frequent recurrence of it,—one at a time is quite enough to keep two pairs of hands busy,—but that patient cogitation of subjects, and jotting down of ideas, is the true method of literary composition. I never allow myself to write on any subject until I have thoroughly thought it out, and got the whole thing arranged, so that it is like looking through a roll of paper. Habits of thoroughness can be acquired with very little more trouble than habits of slovenliness.

I shall be asked if those who are conscious of educational deficiency are to abstain from writing for the press until they are duly qualified? By no means. If you ache to say something in a bee journal, or any other journal, and are conscious of inability to do it fairly well, get some one to write out your ideas for you. Jot them down as well as you can, and have them put into proper shape before sending them to the editor. You have a son or daughter, it may be, attending school. It is part of his or her duty to study grammar and write compositions. Give them an exercise at home by engaging them to write out what you wish to say. Get a friend to do it for you: or pay some one to do it. But do not inflict on an over-worked editor the trouble of re-writing an article for you, especially if he has to help take care of a pair of twins.

Some people when they write for the press hunt up the back of an old letter, or the worst bit of crumpled paper they can find. It is too small for the purpose, so they crowd things, and put a lot of bad composition, bad spelling, and bad writing into such a limited amount of space, that it needs a microscope to decipher it. Paper is cheap. Use a liberal quantity of it. Write big. Leave plenty of margin for corrections. Use only one side of the paper. Carefully and critically scan what you have written. If any word has a doubtful look, write it plainer. Avoid repetition of the same word too often. Have a dictionary and book of synonyms at your elbow. Study grace and euphony of expression. Never say, "Oh! that'll do," if you can make it any better.

Yes, let us take the editor's good advice and "*boom*" the REVIEW. There are various ways of doing this, and one of the best is to help it maintain a high standard of literary excellence. I have offended some of the editors by saying that our bee journals are behind the leading newspapers and other periodicals in journalistic ability and finish. The blame does not lie wholly at the doors of the editors for this. Their correspondents must take a liberal share of it. I suppose I shall displease some of the writers for the bee journals by certain parts of this article. Dear friends, I cannot help it. Flattery is out of my line. A good medicine may be unpleasant to take, and yet help to cure the patient. My interest in apiculture, bee keepers and bee journals makes me anxious that all of them should reach the acme of perfection, or get as near to it as possible, and I hope my plain-spoken talk may contribute in some humble degree toward this most desirable result.

GUELPH, Canada.

Dec. 28, 1891.

How Much it Costs to Produce Honey.

R. L. TAYLOR.

(Read at the Mich. Convention.)



IT NOTHER year
A has come, scattering its blessings where it listed, and is gone: and whether it has favored us as we had hoped and desired or not, we may well look, and in no complaining spirit, to discover if we may by what

rule its largesses have been bestowed, and why our expectations have not been met. To the country at large its bounties have been unexampled, but to those who pursue that vocation which this convention is met to promote, they have been, we will pretty generally agree, in one point at least rather meagre. But are we altogether right in our estimate? Are we not too much given to cultivating a feeling of disappointment that we do not get a heavy crop rather than to accepting an average crop with gratification, or to making the most of a small crop? Relatively we have of course had a bad year; some have even had no surplus at all, but on the average has the year been necessarily an

unprofitable one? I say necessarily because sometimes one has notions of the profitable character of the venture he is about to engage in so elevated that he wastes sufficient to make a fair profit.

Once, many years ago, a craze for the production of hops took possession of the farmers in a certain locality near where I lived. Prices were high, the crop in their estimation certain, and so they were impressed with a certainty that inevitable wealth must fall to everyone engaging in hop raising; then naturally the absolute certainty of coming wealth ushered in a feeling that it was already in possession, at farthest the gold was only over the fence in the soil of the hop field, and a little plowing and harrowing in the spring would secure it, so they were already wealthy and acted on the assumption. No effort was made to secure a line of retreat. Victory was sure. Extravagance in the building of hop houses, in laying in supplies for the packers, and for the handling, weighing, drying and packing of the hops, ruled the hour. But the storm came. Insects infested the hops, the quantity, quality and price were all lessened, and bankruptcy overtook well nigh all of them. The same thing is illustrated by numerous instances in the pine lumber business. High expectations obscured the necessity of care and economy, and waste kicked the profits out of doors, and let in disappointment and failure.

Ruminating upon these things in connection with the business of honey production, the idea suggested itself that perhaps our notions of the status of bee keeping with respect to profits and necessary expenses, need readjusting, and that the present series of bad years would be a good time to consider the subject. It may be I thought that we are risking a chance of failure by encouraging fanciful prospects of success which are much too highly colored, so that we become content to calculate that though by the spending of time in the useless manipulation of the bees and by the purchase of elaborate lines of machinery and supplies, we make the cost of comb honey twelve or fourteen cents, we may yet be sure of a crop large enough so that the difference between those figures and the selling price will yield a good profit. I do not question the prospects of profits in fair seasons with good management, but I wish to call attention to the danger of putting too much reliance on the profits, trusting that they will carry us

through no matter what the seasons are or to what a high point we run expenses. If one practices proper economy and thereby keeps expenses down to the lowest reasonable point, he has still no bonanza to be sure, but a safe, comfortable business. The criterion of expenses should be actual needs, not what it is supposed the business will bear. If we make this latter the test, as the majority are greatly inclined to do, we are all sufficiently optimistic to fall into the fatal error of putting the average yearly production too high, and as a consequence to encounter failure in the end.

Mr. G. M. Doolittle has said that if capital and labor get their due reward the cost of comb honey is thirteen cents per pound. It would be interesting to know how he arrived at his conclusions. Did he take the average of the seasons as they are with him as a basis? In that case, as the seasons with him average better than with bee keepers generally, to them the cost would be even greater than to him. Then I would like to know how much of the cost is labor and how much capital. Maybe he is extravagant with labor. Not long since, if I remember correctly, he gave it as a reason why he preferred a hive whose frames required handling to one which could be handled in two sections, to accomplish the same purpose, that he enjoyed handling the frames—that he got his pay in fun. It may be that Mr. Doolittle and some other bee keepers may grow fat on fun, but I am pretty sure that our wives and children will not grow fat on the fun that we alone enjoy. We may well enquire, too, whether he figures in this kind of labor to make up the thirteen cents cost, and so is contriving to get full pay from each of two sources. At all events it requires no argument to show that it would not do to permit the cost of honey to reach thirteen cents per pound. If it were a necessity to permit it but few of us would remain in the business.

There is no one but will admit that we should keep the cost down to the lowest possible point, and all would be glad to know what that point is. Of course there must be no extravagance in buildings nor in supplies, and there must be no loss of valuable time. I have made and submit tentatively some estimates which may at least serve as a stimulus to further calculations as well as a conclusion to the suggestions I am making. For my figures I have taken one hundred and fifty colonies as perhaps the average

number that could profitably be kept in one place. The expense is made up of what may be called the fixed charges, i. e., those that are the same whether the crop is large or small, and the variable charges which are made up of those expenses which vary with the amount of the crop. The larger the crop the less of course the cost per pound, and my figures are made so as to bring this out somewhat in detail.

I estimate the value of the necessary plant as follows :

Shop and cellar	.....	\$ 300.00
Tools, cases, and extras	.....	150.00
150 colonies bees at \$5	.....	750.00
Total	.....	\$1,200.00

So my table will stand thus :

FIX'D CHARGES.

Interest and wear and tear on plant at 10 per cent	.....	\$120.00
One man six weeks during honey harvest	.....	45.00
Taking bees in and out of cellar	.....	5.00
Other manipulations	.....	5.00
Total	.....	\$175.00

VARIABLE CHARGES.

Cost per each 1,500 lbs. surplus, being an average of ten lbs.:		
2,000 sections	.....	\$ 7.00
Foundation	.....	10.00
Fastening in foundation	.....	1.00
Putting up sections	.....	1.00
Crates for packing honey	.....	10.00
Packing	.....	4.00
Commissions and freight	.....	17.00
Total	.....	\$ 50.00

Total cost of a crop of 10 lbs. on the average,
or 1,500 lbs., \$225.

For each additional average of 10 lbs. there
must be added \$50, whence we get the following
results :

Average per colony—lbs.	Aggregate lbs.	Aggregate cost	Cost per lb.
10.	1,500.	\$225.	.15
20.	3,000.	300.	.0916
30.	4,500.	325.	.072
40.	6,000.	375.	.0625
50.	7,500.	425.	.056
60.	9,000.	475.	.052
70.	10,500.	525.	.05

Taking 15c. as the market price a further
step gives us the net profit in each case, as
follows :

Total crop lbs.	Price.	Total value.	Total cost.	Net Profit.
1,500.	15c.	\$ 225.	\$225	
3,000.	15c.	450.	275.	\$ 175.
4,500.	15c.	675.	325.	350.
6,000.	15c.	900.	375.	525.
7,500.	15c.	1,125.	425.	700.
9,000.	15c.	1,350.	475.	875.
10,500.	15c.	1,575.	525.	1,050.

These figures are far from discouraging, but they speak powerfully for keeping expenses down. In an average location one who spends 365 days in the year on 150 colonies cannot expect to get rich, but by making six or seven weeks do he can make his investment pay well. The difference in the number of colonies in different apiaries, the presence of buildings or cellars that can be used without the expense of making special buildings and cellars, and the difference in average yields in different localities, make great difference in the net cost of honey, yet though our circumstances vary greatly in many ways, we can, nevertheless, by severally calculating the cost in our respective cases, assist one another in putting the business on a more stable basis than it has hitherto occupied.

Determining the Percentage of Moisture in the Air of Bee Repositories.

S. CORNEIL.



EAR SIR.—I have your card referring me to the last paragraph of your editorial on page 156 of the REVIEW for 1888, and enquiring if there is any better or more practical way of determining the degree of saturation in the air of a cellar, and

how to ascertain the degree of saturation, so as to be able to report its percentage.

In reply I may say there is no better or more practical way than by using the dry and wet bulb thermometers, which, when properly maintained, constitute what is known as the Mason Hygrometer. For about two dollars such a hygrometer may be purchased from Jas. W. McQueen & Co., Philadelphia, and from other leading dealers in your country. If, instead of purchasing at this price, any of your readers prefer to use common, cheap instruments, care must be taken to know that they are correct, or how much they differ from correct readings all through the scale. Sometimes the tube contains air. Such an instrument is worthless. To test for this, invert the instrument, and shake it to cause the mercury to run down to top of tube. If there is air, the mercury will not drop down entirely

the end of the tube. If the instrument is inverted close to the ear, and the hearing is acute, a slight click or thud will be heard when the mercury comes down against the glass if there is no air. But if air is present, it will act as a cushion under the mercury, and there will be no sound. By placing the instrument in melting snow the correctness of the mark for the freezing point may be tested, and by placing it in boiling water it may be seen whether the boiling point is correctly marked. For the 180° between these two points there is no way to test the accuracy of the grading of the scale except by placing the instrument side by side with one which has been verified and a list of corrections made. Toronto dealers get instruments tested, and corrections furnished, at the Observatory there for fifty cents each. Owing to the difficulty of making the diameter of the tube the same all through, nearly all instruments require correction in different parts of the scale. There are makers now who turn out instruments which do not vary at any place more than three tenths of a degree. But often cheap instruments vary in places as much as three degrees. By placing the verified instruments side by side with the one to be tested in hot water, and gradually cooling it by adding snow or pounded ice, and making notes of the readings at least as often as every ten degrees, a scale of corrections may be made to be used when taking readings. The importance of strict accuracy will become apparent when ascertaining the percentage of saturation. The bulbs of the two instruments selected should be of the same size. A cylindrical bulb is more sensitive than a spherical one, because the surface exposed, in proportion to the whole quantity of mercury, is greater.

The bulb of one of the instruments should be covered with thin gauze, it cannot hardly be too thin. For a fountain a glass ink bottle will do very well, but if a perforated cork is inserted it will be still better, because dust will be better excluded and more evaporation prevented. By tying loosely a piece of candle wick above the bulb, and inserting the other end in the fountain, the gauze on the bulb will be kept moist. The object at all times should be to keep the bulb covered with a mere film of water. In the upper part of a warm room of a dwelling, in very cold weather, a full sized wick will be none too much, because the evaporation is then very great, but the same wick in a bee cellar

will probably carry up water faster than it will be evaporated, in consequence of which a drop will be found suspended from the bulb. When such is the case the reading will not be strictly correct. A lighter wick should be used when the air is damp. The thermometers should be suspended on a board about midway between the floor and ceiling of the cellar. When taking readings, keep the eye on the same horizontal plane as the top of the column of mercury. If the instruments are sensitive the heat of the lamp may affect them.

In your editorial referred to you have explained the matter sufficiently as far as you have gone, but a table is necessary to ascertain the percentage of saturation. As such tables are seldom called for, I had difficulty in obtaining one, and as you may find a similar difficulty, I have taken the trouble to copy my table for you. I find a reference to Hygrometrical tables, adapted to the use of the dry and wet bulb thermometer, by James Glaisher, F. R. S., London: Taylor & Francis, sixth edition, 1870. This work may be ordered through any bookseller, and probably contains everything required.

I am pleased to find that you are taking up the subject of moisture in the air as a factor in safe wintering. It used to be a hobby of mine, and later observations have confirmed the opinions I advocated some years ago. I shall watch your observations with interest.

[Friend Corneil, in a neatly ruled book, very carefully copied the table showing the percentage of moisture from 32° with the wet bulb up to 104°, with the difference between the wet and dry bulbs from 1° up to 29°. I do not give the table entire, simply that portion that would be likely to be needed in determining the percentage of moisture in a bee cellar. As the percentage of moisture is always 100 (complete saturation) when the wet and dry bulb thermometers show the same readings, I have omitted that column and commenced with the column when the difference between the thermometers is 1°.—ED.]

TABLE FOR FINDING THE RELATIVE HUMIDITY
(OR PERCENTAGE OF SATURATION) AT ANY
MOMENT, BY SIMPLE INSPECTION.

RULE—Note the difference between the readings, and find the relative humidity at the intersection of the line of the *wet bulb* reading, and the column headed “Difference.”

Thus, wet bulb, 50°, dry bulb, 55°, difference, 5°. From 50° in left hand column run across to column headed "Diff., 5°," and we have relative humidity 68.1.

Wet Bulb	Diff.	Diff.		Diff.		Diff.		Diff.		Diff.	
		1	2	3	4	5	6	7	8	9	
32	89	37.9	2.6	69.8	61.0	52.7	45.0	37.9	33.1	22.5	0
33	89	37.9	7.7	70.5	61.9	53.7	46.6	33.9	33.2	8.2	6
34	89	38.0	2.7	71.2	62.8	54.7	47.4	6.40	7.34	3.28	3
35	90	0.80	7.71	9.63	6.53	5.78	4.88	8.42	0.35	7.29	9
36	90	3.81	1.72	6.64	5.56	7.50	0.43	3.37	2.31	1.4	
37	90	5.81	6.73	2.65	3.57	7.51	1.44	6.38	6.33	0	
38	90	7.82	0.73	8.66	1.58	7.52	2.45	9.40	0.34	4	
39	91	0.82	4.74	4.60	9.59	7.53	3.47	1.41	3.35	9	
40	91	2.82	9.75	0.67	7.60	7.54	3.48	3.42	6.37	3	
41	91	4.83	3.75	6.64	4.61	7.55	4.49	4.43	9.38	6	
42	91	6.83	6.76	2.69	1.62	4.56	3.50	5.45	0.39	3	
43	91	8.84	0.76	7.69	8.63	1.57	2.51	5.46	1.41	1	
44	92	0.84	3.77	2.70	4.63	8.58	1.52	5.47	2.42	4	
45	92	1.84	7.77	7.71	0.64	6.59	0.53	5.48	3.43	4	
46	92	3.85	0.78	1.71	6.65	3.59	8.54	4.49	3.44	5	
47	92	5.85	3.78	6.72	2.66	0.30	6.55	2.50	2.45	5	
48	92	6.85	6.79	0.72	7.66	7.61	3.56	1.51	2.56	5	
49	92	7.85	9.79	4.73	3.67	4.52	0.56	9.52	1.47	5	
50	92	8.86	1.79	8.73	8.68	1.62	7.57	7.52	9.48	4	

LINDSAY, Canada,

Jan. 2, 1892.

Colorado. Its Soil, Climate and Alfalfa Farming, and how the Latter Furnishes Honey.

R. C. ATKIN.



RIEND Hutchinson.—When I read your editorial on Alfalfa farming, October REVIEW, page 265, I felt that I would write you some facts in regard to Alfalfa. Later I received your request to review the article referred to

in the *Cosmopolitan*, and I comply with pleasure. In the main, the article is no doubt true, but to those unacquainted with Colorado and the West, it is misleading.

The statement that Alfalfa "is a clover," and that "it sends its roots down twenty feet" into the ground, is true; and, as it has a large, penetrating root reaching downward, so 'tis true that "with the eight or ten inches of soil near the surface, it has little to do."

It is also true that it "resists drouth," does not exhaust the soil, is "a rich vegetable fertilizer," and that "it grows luxuriantly in the rich soil below the foot hills of the

Rocky mountains." It resists drouth because of its depth and extent of roots. I have often noticed that peculiar, penetrating root in the few varieties of plants that are growing wild on the arid lands. The shallow feeder could not possibly live on such lands.

The soil is very rich in most of the arid regions. Why not, when for years and years, probably for ages, no vegetation to speak of has been upon it, nor water sufficient to leach out its fertility?

The statements in regard to "deep plowing" and the necessity for careful work are good enough. Those principles are applicable to farming in general, and to other pursuits as well: "work well done is twice done" is the old adage.

The writer in the *Cosmopolitan* leaves the impression that the seeding is done on new ground and without other crop. 'Tis not so here: it is usually seeded with wheat after being cropped to get the ground in good shape, much as clover is seeded in the East.

The illustrations of scenes in the hay field are fair, and easily comprehended, because such scenes are familiar to most people. However, much of the hay here is hauled in and stacked by machinery and horse power, and not pitched on to wagons or stacks by hand forks; but the illustrations representing irrigation, viz.: "Opening the Sluices;" "Hillside Irrigation;" "A Main Supply Ditch," etc., serve mainly to help color the article. They give one but a faint idea of the reality.

But now for the main points I want to criticize: He says, "Along in February heavy ploughs were breaking the soil eight and ten and, where possible, eleven inches deep—this fine loam of Colorado rolling over as if it had been broken every year for half a century," etc., leading one to believe that Colorado soil was a fine, mellow bed, about ready for the seed. Some of it is, but *much* is *not*. Colorado has thousands and thousands of acres of *pure sand*, where 'tis nothing *but sand*, and in some places, hills piled 100 to 200 feet high. Then it has the "sandy loam," the clay, the adobe, of which brick is made, sun dried and used without burning, and which cannot be plowed as represented. Much of the State is the "Rockies." Again, the plains in east Colorado have a very rich sandy soil. It is one of the most beautiful countries a man ever looked at, but water can be had, excellent water, only at a depth of from 100 to 300 feet. And, alas, neither

rain nor irrigating water can be had to make farming a success. One can travel fifty to 100 miles and not see a tree, and bees would starve to death, as I know by actual "experiment." Such is "Colorado soil."

In describing irrigation of young Alfalfa he says, "the rushing waters let loose by the irrigator;" a novice should know better than that: only a gentle flow is used, and many a poor farmer can't get that. Again, in speaking of the newly seeded Alfalfa meadow and how it should be carefully cared for until the plants are well established, he says: "Three times a year all the heavy farm machinery moves across the fields, and the young plant is too tender to resist such rough trampling of machines and horses." That sounds well, but in practice amounts to almost nothing: most seeding *here* is done with wheat crops, as is done in the East.

Describing the work he again says: "Wagons move off with their complement of pitchers and irrigators"—which would lead one to believe that both sets of men were at work in the same field. Perhaps 'twas true: but the field likely contained hundreds of acres: and what does the average citizen know of the big ranch farming? No, pitching hay and irrigating do not go on in the same "field" at the same time, as the general reader understands by a "field." Neither is it true that "the cocks are built three times as large as in the East," but, instead, are seldom more than a fork full in a "cock," and very much is stacked from the winrow.

The article in general is true, more particularly of a large "ranch;" but was evidently written to *read*, and is not a faithful representative of "Alfalfa farming," and is very misleading to those who *don't know*. Perhaps, within a mile or two of that ranch one could not make a living from hundreds of acres. In parts of Colorado one can go in a few hours ride by wagon, from summer heat to winter cold, and in a few minutes walk, from fertile to barren soil, barren usually from lack of water. Colorado represents just such diversity.

Alfalfa here is the main forage and hay crop. But when it comes to the question of its value, as compared with red clover and timothy, 'tis doubtful if it has any real advantage, save in arid regions, because, as before stated, it stands the drouth.

Red clover is being planted here more and more, and to-day clover hay brings the highest price of the two.

But the difficulty is that the snows on the mountains melt and go down the streams in early and mid-summer, and in the fall the water supply is short; and if the clover be not irrigated in the fall, it gets so dry it kills out. The Alfalfa does not kill, owing to that *immense root*. So, you see, necessity compels the growing of the latter.

Now, about that "long drawn out bloom." Alfalfa comes into bloom just a few days later than red clover, perhaps a week to ten days later. If allowed to stand, it will continue to bloom until frost, or nearly that time, especially if it has plenty of moisture so it will be supporting both ripe seed and bloom at the same time. Such a field is almost worthless for hay: for it is too hard and woody. Such is cut for seed.

When wanted for hay it is cut just as soon as it begins to be fairly started in blooming, and often sooner. And so it is throughout the season, never being allowed to reach *prime* or full bloom.

Whence then comes "Alfalfa honey?" It comes from the seed crop, from the ditch sides and fence corners, and from the wheat fields. Wheat is sown on Alfalfa sod broken up, and that thick, tough, long, tap root, is so hard to cut off that the plow will dodge many of them, so that quite a little Alfalfa grows in the wheat. From that we get quite a little pasture, until wheat harvest, which is the last of July and first of August.

Then, sometimes, a farmer will get behind with his work and let a hay crop of Alfalfa "stand too long," so we get, perhaps, a few days pasture from such fields. But wheat harvest seems to practically end the flow, except one has a range of seed crop fields of alfalfa; such, however, are scarce.

Now, if all the alfalfa acreage of Colorado were allowed to bloom to its prime, I believe it would yield ten, perhaps twenty times the honey it does. It certainly is a good honey plant, and produces first class white honey. The bloom is a whitish blue color, so I suppose it yields white honey on the same principle that the washerwoman makes the shirts white, by using bluing in the wash water.

Some portions of the state have other sources than the alfalfa. Some have clover, which follows the alfalfa, but does not produce as good honey. We have a little of it here.

As before mentioned, Colorado soil is very diversified, and a few miles often make a vast difference. But here our honey flow

lasts only forty to sixty days, all told; and the balance of the year our bees depend on old stores for their living. I know that in the past two years bees never made a living before June 15th, nor after Sept. 1st. An apiary of ten-frame Simplicity hives won't average stores enough to last from honey to honey again. With a ten-frame hive one is not safe without about ten pounds extra per colony of reserve honey in the honey house: so where would your little eight-frame families be?

Now, friends, I have done what I could to make plain this "alfalfa" question. To any who anticipate locating in the West, I will give a word of advice:

Remember, that the West is a big country. That much of it is new. That the climate, soil, altitude and adaptability to various crops, etc., is very diversified. That principal business centers are farther apart than in the East. Railway rates are higher, especially in the mountains. *Don't forget* that the West is "boomed" for all it is worth, and often more. For those who like it, it is a good place to live, and there is much room for development: but, if you are fairly well situated, don't pull up stakes and go West just to raise honey in the alfalfa fields. First go and see what you are going to, and know whether you want to change or not. The West has advantages over the East, ditto the East over the West. Perhaps it is six of one and half a dozen the other, but the one is altogether different from the other. Again I say, know where you will alight before you jump.

LOVELAND, Colorado, Nov. 20, 1891.

FRIEND H.—This is quite a long article. I did not know whether you wanted the "review" more in detail or not. I have condensed it as much as I thought I could to do it justice. Perhaps you wished more said about the honey part and less about the alfalfa in general.

The "tenderfoot" knows so little about the West, and so many are taken in by "boom papers" and "boom articles" that I have tried to show it up as near the truth as possible.

Coe made a mistake when he came here from New York. Not so much because he came to the "alfalfa region," but because he had no conception of the conditions. He said he had no idea the flow was so sharp and short.

R. C. A.

Writing for Pay.—Hints to Poor Penmen.—

What to Write About.—Avoid

Personalities.

ERNEST R. ROOT.

OMMENCE with your subject matter at once. Don't attempt to waste your time, nor that of your reader, by making a "suitable apology" for writing. A preface does very well for a book; but for a magazine or journal it is rarely in place. I have in mind one old writer on bees who always mars his communications by hitching on a sort of excuse.

Don't write for pay or apicultural prominence. You will rarely attain unto either if you do. The one who writes because he has something to tell, and not because he has the "almighty dollar" in sight, will probably get the dollars and perhaps a little glory thrown in. I am one who believes that good articles should receive remuneration; but "ye editor" must be the judge as to the amount of value in the article. Young writers should not be discouraged if no pay is forthcoming for the first few maiden efforts. It is usually the case that the pay doesn't come until the writer has carved out for himself some reputation.

Most of us would be satisfied if we could only *see* our communications in print, without the almighty dollar. Perhaps a few suggestions here may not come amiss. Other things being equal, a tired, overworked editor, as many of them are, prefer legible and clean manuscripts, written on one side of the paper, and without interlineations or erasures. Among equally good articles as to subject matter, these are the ones he will select, provided he has a surplus of matter on hand; but clean, "good copy," as the printers call it, with no other merit, finds insertion in the proverbial waste-basket.

"But," says one, "I have something to tell, but I write horribly; and, besides, I don't know how to spell, nor how to divide my sentences."

I'll tell you. Get your wife or one of your children to copy off your scribblings, and see how quick the editor will print it, *providing* you do have something to tell. I know one writer for one of the secular papers whose manuscripts were once rejected. He thought he knew the reason, and finally had his better half copy off, in good, plain hand, his communications. Ever after that he had no trouble about getting his letters into

print. As a general rule, a feminine hand writes more acceptable printer's copy than that of the other sex. While I use at our office some poorly scribbled, almost indecipherable matter, because the subject-matter is par-excellence, yet the same "par excellence" in a good, plain hand gets to the printers at once, and hence is less liable to be held over. The articles of Dr. C. C. Miller and J. A. Green, for instance, are well nigh faultless, rhetorically speaking; and as the subject matter is always good, they go straight to the printers at our office, without reading by the editor; and even he sees them only after they are in type.

Now, perhaps I shall be discouraging some from writing. I should be sorry to do this. I simply desire to give hints on what sort of matter is most acceptable. Write, by all means, if you have something to tell, even if you are so unfortunate as not to have a wife or children who can copy off your poor scribbling. If you are a woman, I'll risk the legibility of your copy. By the way, it's a pity that more women don't write for the bee papers.

Another says, "I don't know whether I've got something good to tell or not." If you are passably familiar with bee literature you *ought* to know. Editors and the general bee keeping public don't care for dry details as to what one, two, or three colonies did for you. Available subject matter, in a word, is what we all want. For instance, if you have had success or failure with the automatic swarmer, or some other new fad, tell us about it. Again, if you can make bees pay, even on a small average surplus per colony, when others, with the same or larger average, fail, tell us about it. If you have discovered a "short cut" by which you have been enabled to save many dollars, let your friends know it through one of the bee papers. If you can manage alone three or four hundred colonies when most others require hired help to manage the same number, let us know how you do it. These are only a few of the acceptable subjects, and a little intelligent thinking on your part will show you others. Watch the journals, and see what editors and their subscribers wish to know.

Intelligent criticisms, without acrimony, on articles already in print, detailing methods and devices, form good subject matter. Yes, "sail" into the editor, if you think he is wrong, or is possessed of some headstrong notions. It will please him, if you write in a fair and gentlemanly way. Good discuss-

sion always brings out many valuable ideas. If, however, you *feel* like giving your opponent in discussion a "thrust," or if you want to see how smart you can be in delivering stinging personalities, don't, *don't*, *DON'T*. Forbear to call the editor unfair if he chops you off in discussion. He probably knows better than you that your communication is too personal.

In conclusion let me say, make your articles short, as a general rule. I agree with the editor, that long articles may be good in proportion to their length; but the average reader prefers those of moderate length.

Well, I must practice what I preach, and so will stop right here, even at the risk of being abrupt.

MEDINA, Ohio,

Jan. 12th, 1892.

Comments on a Beginner's Day-Book. .

E. E. HASTY.

AN. 5th, 1880. The ground having quite thawed out, I commenced peeling the surface of the apiary to kill the sod of winter weeds."

This mid-winter campaign has my approval still. If one is going to have a clean surface he has got to strike for it. Possibly the blows cost more than the clean surface amounts to, yet the man who can do a thing or two from "clean spunk" will do the other things all the better for it. My predecessor in the apiary had tried for a clean surface, too, and had gradually allowed himself to be driven to the wall by such weeds as Shepherd's purse, false fire-weed, chickweed, sorrel and others—weeds that grow out of due season, and pay very little attention to any decent sort of murdering. So I got a nice, sharp shovel and shaved things up, covering the premises with little round heaps of weed sod. Freezing and thawing and rotting would finish them up, I thought, so the heaps could be spread around again in the spring. I quickly perceived that my foes were not intending to accept that program. Thereupon a new program, that had to be accepted, quickly came to the front: and my peelings were wheeled off into one great heap outside the limits. But this did not all flow with entire sweetness any more than true love does, for the very next day's entry says,

"Jan. 6th. Thermometer rising to 55: bees flew, stung me, and drove me off."

Pretty state of things to be confessing, isn't it! The *bee-master*, put off the grounds, and his business stopped. In all the years since the above note was written I do not recall that I was ever driven away from a hive that I wished to open and go through; but I have been driven off the premises when I tried to hoe the ground times without number. To hoe in a large apiary when the bees object to it is pretty nearly one of the things that "can't be did." The fury of the little fellows increases at such a rate, and their numbers soon begin to show the geometrical ratio of increase, that one stays not on the order of his going but goes at once. The proper solution of the difficulty is, of course, to do all hoeing and stirring ground by short spells, at early dawn, and while dusk is coming on. I suspect that the humic acid of soil, which is always diffused around in the air more or less when fresh earth is moved, reminds the bees of their own acid poison. The smell of it in the air convinces them that duty requires a general and miscellaneous row. If not, what makes 'em act so, won't somebody tell?

"Jan. 9th. Thermometer 61°. No frost at night for a long time. Bees out lively. South side of double stand (11-2) closed with dead bees again. Looked in: they seemed all right at the top."

This, mind you, is the north line of Ohio. The entries show the winter of '79-'80 to have been almost worthy of Florida. Yet, as the above indicates, some colonies of bees contrived to die off with very disagreeable rapidity; and my sixty-three colonies which I bought in the fall turned up as only fifty-six in the spring—a loss of seven. When we have mild winters we may be thankful for them, as they do not subject us to such frightful losses as the severe winters do; but the mild winters have trials and dangers of their own; and it is doubtful if there is anything better for the bee man than just a good, quiet, "snug" winter, eventuating in an early spring.

January 14th, like a worthy beginner that I was, I went into the inventing business. The reader shall be spared the lengthy description. Suffice it to say that it was a very elaborate cage for introducing queen-cells, that got invented. As it did not contain the feature of letting the young queen release herself, it is not up to high water mark now. I want to say one good, honest, hearty word in favor of beginners' inventions. Invent,

invent, invent all you please. The man who invents will progress; and the man who progresses will "get there." That the inventions themselves will ornament the lumber room, and stir you up to wonder at yourself years hence, signifies nothing—go invent 'em all the same. But here comes an item that warns me to retract a trifle. We must have a proviso that the inventions are not to be very expensive ones.

"Jan. 19th, commenced digging the ditch for the hibernators."

My invention took such a behemoth turn that I deliberately proposed to sink my groups of nine hives each into the ground, and have movable roofs over them. The roofs were to be hoisted in all fine weather and let down in all severe weather—a fine job for winter mornings and evenings! For summer part of the hives were to stand on the bottoms of the hibernators, and part of them were to be perched on the bank—the roofs meantime to be manipulated as great shade boards. A good many dollars of money and a good many days of work went for the tile and the long outlet drain. Good sense at length came whispering around and made herself heard, saying, "Fix one or two groups that way, and try them for a year or two; see how it *works*; especially see how you like the summer manipulation of things before you dig up your whole apiary by the roots." I said I would. And then, don't you believe, the jade went to work and persuaded me to first try three or four *diminutive* hibernators with only one hive in each. These would be inexpensive and easily managed. Like a docile sheep I listened to her voice, and did so. The result of this preliminary experiment was neither a resplendent success nor a flat failure: but the edge of my enthusiasm was so dulled that no grand hibernator after the original plan was ever made.

"Jan. 27th. Same weather. Thermometer 58°. Overhauled eleven colonies of bees. All but three had brood. Two of these three had *leaky roofs*."

Ah, those leaky roofs! We have bee keepers too scientific, and bee keepers too closely chained to the hard, every day facts; we have bee keepers that handle their bees too much, and those who handle them too little; we have bee keepers that spend too much money on fixtures, and plenty of bee keepers of the opposite description; but the bee keeper who takes *too much* pains to keep his

roofs tight has never yet arrived on this sublunary planet. Out upon that unceasing loss, that hidden snare, that lying perverter of apicultural facts, the leaky roof!

And now, to put the preface last, I was going to have the first article a preliminary one, telling how and why I became a bee keeper—and all that sort of thing, but La Grippe came along and batted me out of it—nearly batted me out of time, too. So here comes at last a January article made out of the first January entries.

RICHARDS, Ohio, Jan. 9, 1892.

Out-Apiaries a Partial Remedy for Poor Seasons.—Raising Fruit and Selling Bees,

Queens and Supplies a Still

Further Aid.—Good Seasons

Will Come Again.

E. T. FLANAGAN.

HAVE just finished reading your editorial in November REVIEW, on a subject that is of more than ordinary interest to me, and I have no doubt of like interest to very many bee keepers situated as I am. The question is a serious one. What shall we do? My experience has been very similar to yours, as I have had but one partial crop for the last four years. It is hard for one who has wife and children to support, debts to pay, and a home to make, to be so often disappointed: and that, too, after the closest attention to business, conducting it as it should be done, sparing neither mental or manual labor, hardship or exposure, or the necessary outlay, to have everything done at the right time and in the right way to insure success. The risk, and loss of interest on capital invested, too, when one has as many as 300 to 400 colonies, is no small matter either, when one has to use the closest economy to make "both ends meet."

Surely one must be in love with his chosen vocation to continue in it year after year in the face of such results. My friends have been for years urging me to give up bee keeping, believing, as they say, that I could do far better in almost any other business than my present one. But I don't want to give it up, and intend to fight it out on this line, as Grant did, until I win, as I feel sure I will, sooner or later, if life and health are given.

In the meantime, however, what must we do? Two years ago I thought very seriously

of moving all my bees to Colorado, where we are assured of a fair crop of honey every season—(just the thing I most greatly desire)—but all of us cannot go to Colorado. Try out-apiaries, then. That is exactly what I have been doing, and from my present standpoint, that is a partial remedy, a honey seldom fails to be gathered in some quantities, in some places. (As an instance I can say that I secured some 4,000 lbs. extracted from out-apiaries this past season, but had to feed over 2,000 lbs. of it back again to the home apiary of 100 colonies.) But then, the distance and location of out-apiaries are to be considered. My nearest out-apiary is nine miles from home, while the others are twelve, fifteen, eighteen and twenty miles respectively, and that distance, even with good roads, involves an immense amount of travel and loss of time going and returning, not counting bad roads, rainy and stormy weather.

Speaking for my own locality, I feel almost sure the principal cause of the failure of our honey crop has been owing to the severe drought that has prevailed for the past three years, and if I am correct, when normal seasons occur, as they are sure to do, we may look for a return of the old time flow of honey. I have, perhaps, been somewhat more fortunate than some other bee keepers in that I have a nice little fruit farm and a fair trade in bees, queens and bee supplies, and I may as well confess but for them I would have been compelled to give up bee keeping, or, as you advise, as to the last resort, *gone to the flowers*. But where would that have been? I have read the bee journals carefully for years, and I have not yet heard of a locality where there has not been a partial or total failure of the honey crop, except it is in localities, where irrigation is practiced, and that area, it must be remembered, is a very circumscribed one, in which they are even now beginning to complain of overstocking. My advice, to all who are fortunate enough to have an apiary of any considerable size, and in good order, is, hold on to your bees, don't give them up yet; do everything in your power to hold your own, for the seasons will certainly change for the better soon, and if they do, we may look for the old time flow of honey that will amply recompense us for the hardships, trials and losses of the past.

BELLVILLE, Ills.,

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Bee-Keepers' Review.

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FLINT, MICHIGAN, JAN. 10, 1892.

RAMBLER writes that he has an apiary of 200 colonies five miles from Riverside, California. He says it is a glorious country—orange trees over the sidewalks and oranges on the ground. By the way, Rambler has been elected Secretary of the Cal. B. K. A.

A BOUNTY ON HONEY is what A. N. Draper urges through *Gleanings*. Two cents a pound on extracted honey is what he recommends. He thinks the price of comb honey is not affected by the low price of sugar. He also argues that the placing of a government stamp upon a package of honey would be a sort of trade mark—a guarantee of purity.

R. L. TAYLOR, at the Michigan State Convention, said that he could see no advantage in the use of self-hivers if the bees must be manipulated after they had swarmed, in order to get good working swarms. He thought the queen-trap would answer every purpose. If a colony must be manipulated—why, manipulate it whenever you find its queen in the trap. What do the advocates of the hiver say to this?

THE CALIFORNIA BEE KEEPER.

Rambler writes me that the *California Bee Keeper* is only temporarily suspended. Pressure of other business and the absence of the editor's eldest son, who has left for a more lucrative position in San Francisco, was the cause of the suspension. Mr. Sty'an, the editor, is an Englishman, has been in this country eight years, and has thirty colonies of bees.

AT THE ALBANY convention, Prof. J. A. Lintner expressed doubts in regard to the killing of bees by the spraying of trees with arsenites. Case after case was cited in which large numbers of colonies had perished when orchards near by had been sprayed—in some

instances large quantities of dead bees were found under the trees. The one thing lacking, in his opinion, to establish the proof, was an analysis of some of the dead bees; but he said he should advise orchardists not to spray during bloom—something he had always advised against and should continue to do, so long as there was room for a doubt in the matter.

THE TRIP TO ALBANY.

At the end of the second delightful day spent at Medina, Ernest and I started for our all-night's ride to Albany. We reached Cleveland at seven o'clock, where we had an hour to wait. To me a theatre is scarcely more interesting than an hour spent at night in one of those great union depots in one of the large cities. The almost constant coming and going of trains, the surging to and fro of the great crowds, the glare of headlights, the clanging of bells, the hiss of escaping steam, the hoarse coughing of the engines echoing and re-echoing against the high vaulted roof, the clatter of hand trucks loaded with baggage or express matter, the conductors, brakemen and other officials moving about in their gorgeous uniforms and bright buttons, and over all the glare and glitter of the electric lights, all combine to make the most animating scene I ever gazed upon. It seems almost like being in another world. No wonder timid women become bewildered in changing cars in the night at one of these great depots.

A little after eight found Ernest and myself seated in one of those palaces on wheels—a Wagner car—rolling eastward. Now that the excitement was all over and we were safely started, such a feeling of hunger came over me that I was obliged to say, "Ernest, I am hungry." (I knew he had brought a lunch box with him.) "Help yourself," he said, as he reached for the lunch. When he saw me eating, he, too, "was hungry." The result was that we pretty nearly demolished the lunch, and in the morning had to pay \$1.00 each for our breakfast. I have learned by experience, however, that it does not pay to neglect meals when traveling, even if they are expensive.

After we had finished our lunch we settled ourselves for a good, long, visiting chat. Several times the thought came to me, "How pleasant it is for the editors of two rival journals to thus go off on a trip together and really enjoy each other's company."

We reached Albany the next morning about nine o'clock, went to the hotel and registered for the same room, and then went to the hall where the convention was to be held. While I am on this subject, I may as well say that Ernest and myself were together so much that some one remarked that he "guessed that we must be brother and sister."

At the hall I met for the first time many of those Eastern bee keepers that I have so long wished to see—those men who, when you ask them how many colonies they have, will answer away up in the hundreds, and yet say it modestly.

One of the important topics brought up was the damage that may result to bees from the spraying of fruit trees when in bloom, but I have noticed this elsewhere. Grading honey also came in for a share of attention, but as that has been treated quite fully in the leader for next month's special topic, it will not be necessary to say more here. A standard of excellence for Italian bees was also adopted. The schedule of marking is as follows: Comb-building, 10; honey gathering, 35; prolificness, 15; wintering, 15; gentleness, 10; color, 5. The bees must have three yellow bands, adhere well to the combs when handled, and not rush around, gather in clusters and fall to the ground. It seems to me that some of the points taken would be rather difficult to decide—that of honey gathering or prolificness for instance.

The meeting adjourned early in the day of the third day, and I took advantage of this early adjournment to go out about thirty miles to Hoosick Falls, the birth place of my wife. It was here that I got my first glimpse of a mountain. One of my wife's cousins went with me over into Vermont, about two miles, to Bennington, where there was lately completed a tall stone monument in commemoration of the battle of Bennington. The sight of the mountains with their frosty summits was a treat to me. I could not look at them enough to satisfy myself. Then when we were coming home in the evening, what a beautiful sight to look back at the peaks rising one above another in the gloom of moonlight, the farther away peaks being scarcely visible in the hazy, misty night.

Yes, I visited the old house that had been my wife's home in girlhood. A new house had been built where the old one stood, the old one moved away and converted into a carriage house. I went up stairs and found

the bedrooms still intact. I was shown the room that had been my wife's, and as I stepped into it, it seemed as though I were standing in a holy place. I wished that I might be left there alone one half hour to indulge my imagination in the weaving of strange fancies, but the voice of my companion, in some common place remark, brought me back to the world again.

When I was ready to start for home the next day, all the beekeepers had gone, so I had to go alone, and as I settled myself into a seat in the car at Albany, about three P. M., and thought of the all-night, and all-the-next-day, ride before me, it seemed like a long way home. When the shades of night came down and I could see lights beginning to twinkle in farm houses along the way there arose in my mind the picture of my humble little office with the wide doors opening out into the sitting room where the ruddy glow from the coal stove would be just beginning to show, with the wife and children gathering about it, and, as I leaned my head against the side of the car and closed my eyes, I thought if there is any man in this broad land that is truly blest, that is satisfied with and enjoys his lot in life, it is the editor of the REVIEW.

THE GRADING OF HONEY.

There is probably no topic in which bee keepers are now more interested than that of grading honey. It is a new subject in that there has never before been any attempt to formulate a set of rules whereby uniformity might be secured. Now, two conventions of a national character have each had the hardihood to recommend a set of rules. Each convention has adopted a different set of rules. Each has its faults, and, at best, so it seems to me, they are simply "motions before the house,"—a starting point from which the matter may be discussed: and I am sure the REVIEW cannot do better than to make the "Grading of Honey" a special topic for discussion in the February issue.

First, let's give the set of rules adopted by the Northwestern Convention when it last met at Chicago. They read as follows:—

FIRST GRADE.—All sections to be well filled; combs straight, of even thickness, and firmly attached to all four sides; both wood and comb to be unsoiled by travel stain or otherwise; all the cells sealed, and the honey of uniform color.

SECOND GRADE.—All sections well filled, but with combs uneven and crooked, detached at the bottom, or with but few cells unsealed; both wood and comb unsoiled by travel-stain or otherwise, and the honey of uniform color.

THIRD GRADE.—Sections with wood or comb, or both, travel-stained or otherwise much soiled, and such as are less than three-fourths filled with honey, whether sealed or unsealed; and the crates containing two or more colors.

Following the above rules, Mr. Baldrige, the one who drafted the rules, had a note, which read as follows:

NOTE.—The color of the honey to be known as light, medium, and dark; the crates to be unsoiled, but if otherwise, the honey in such crates to be classed in the next grade below the one indicated in the instructions.

FOURTH GRADE.—All crates filled with honey not described in any of the foregoing grades.

The convention did not see fit to adopt the note, nor the fourth grade. There seemed to be a sort of feeling that a venturesome thing had been done in adopting what had been adopted, and it would be safer to go no further. Personally, I should be in favor of their adoption. The man who will get his honey to market with the cases unsoiled (and it can be done by the use of outer crates) ought to reap the benefit. If the dealer re-crates honey in clean cases, he ought to have his reward. The idea embodied in this note is to compel producers to use nice, clean cases and, in some way, get them into the hands of dealers in that condition: or to cover the dealer's trouble and expense if he transfers the honey into clean cases.

The greatest fault that I have to find with the Chicago rules is in the naming of the grades. As J. H. Nellis remarked at Albany, "we should grade *up* instead of down. Awhile ago somebody began putting an X on the head of a flour barrel. This indicated that the quality of the flour was excellent. In a little while somebody put on two XX's to indicate that the flour was superfine. Then there was added another X for extra superfine: and this thing was continued until the number of X's was limited only by the size of the barrel head. We should grade our honey in a similar manner." There is some truth in what Mr. Nellis says. To grade down is to give the idea of cheapness and low quality. The names of those Chicago rules ought to be moved down one notch, at least, and a new name given to what is now called first grade. The name given to what is now called the first grade ought to be a word indicating quality in the superlative degree. Perhaps the word "fancy" would answer as well as any. The rule as now given calls for *perfection* in the first grade, and the great bulk of honey would be thrown into the second grade, and the stigma of *second grade* would be prejudicial to its sale.

The great bulk of honey should be in what is called first grade. If from a crop of 10,000 pounds, 1,000, or even only 500 pounds of absolutely perfect sections can be culled, let them be called "fancy" and quoted and sold as such. If wide frames and separators must be used and the honey removed promptly upon its completion, in order to secure honey that will meet the requirements of the fancy, then let the man who can and does take such pains receive the reward that he merits. I have certainly seen honey that could be classed as first grade according to the Chicago rules. After the fancy grade is picked out, then have a first grade that will take the great bulk of the honey. With a little modification, I think what is now second grade in the Chicago rules would answer very well for first grade. I think it ought to be changed so that it would admit sections in which the wood or comb is slightly travel-stained.

I also consider the note added by Mr. Baldrige as very important. I can't agree with those who think only white honey can be first class. This system of grading does not apply to the *kind* of honey, that is, to the source from which it is gathered, but rather to the mechanical manner in which it has been handled by the bees and their owner. In other words there is first class buckwheat honey just as surely as there is clover. When in Albany, I, in company with E. R. Root, visited the commission house of H. R. Wright. Upon our arrival we found Messrs. Segelken and Killmer, both New York dealers, examining a fine lot of buckwheat honey, and one of them was just exclaiming: "That's a fancy lot of buckwheat," and it was. Ernest Root also told me of seeing a drummer help himself repeatedly at the table, to buckwheat honey. Upon being asked his opinion of such honey he replied: "It's the only honey fit to eat." This plan of calling only *white* honey first class won't do. Tastes differ in this respect. We can have fancy white, fancy medium and fancy dark honey, even if it does have an odd sound at first. We can also have a third grade white honey. When it is possible to give the source, that might answer if all people were as well informed as bee keepers in regard to this matter; but, as it is, it may be well to use the words "white," "medium," and "dark;" or perhaps the word "amber" would be a better word than "medium." We would then have "fancy white,"

"fancy amber," and "fancy dark;" and "No. 1 white," "No. 1 amber," and "No. 1 dark," and "No. 2 white," "No. 2 amber," and "No. 2 dark." I think "No. 1" and "No. 2" will be better terms (more euphonious) to use in connection with the terms "white," "amber" and "dark."

Let no one get the idea that I have a desire to "run this thing," to say how it *shall* be: I am simply expressing my views very freely, just as I hope my correspondents will do.

Now I will give the rules for grading as adopted at Albany :

Honey shall be graded in two grades, the first to be known in the trade as "fancy," or "fancy white," and to be marked "A." It shall be composed of well-filled sections of light-colored honey. One face of each section shall be perfect in appearance, fully sealed, except the line of cells touching the wood. The other side of the section shall either be perfect in color and sealing, or nearly so.

The second grade shall be known in the trade as fair to good, white, and be marked "C," and shall be packed to meet the requirements of those desiring a good honey, but who care little for outside appearance. It shall be composed of honey thrown out of the first grade, irregular and travel-stained combs, sections, not perfectly filled but yet having but little unsealed honey.

White honey, third grade, mixed with inferior honey, including buckwheat and fall flowers, shall be graded by itself, and marked "M." We desire that combs so badly stained as to have the appearance of saffron be thrown into this grade.

Buckwheat honey shall be packed by itself and shall be marked "B."

Those bee keepers sending to market boxes known as "pieces" shall put upon them a private mark of their own. This should also apply to honey-dew and any other kind not falling in regular grades.

To my mind the above is too prolix, too profuse, too long drawn out, too wordy, contains too much advice, suggestions about packing, marking, etc., etc. Rules for grading ought to be very concise, yet very carefully worded.

I notice also a disposition on the part of some to oppose the adoption of any grade requiring perfection. It will be noticed that in the Albany first grade, imperfect sections are allowed in the first grade. In fact there was no attempt at giving a rule that called for perfection. I suspect the reason was that it was well known that the great bulk of honey could not go in such a grade, and the calling of it "second grade" would work against its sale. But, as I have already explained, the making of a grade above first grade—a grade that shall be "fancy" or "premium" or superfine, or something of that kind, will remove this objection. But I think I have said enough for the present, and shall take pleasure in presenting to my readers, in the next REVIEW, the views of others.

EXTRACTED.

Grading Honey.—The Chicago Rules Criticised.

The topic in which bee keepers seem the most interested at present is that of the "Grading of Honey." Mr. Byron Walker was not satisfied with the rules as adopted by the Northwestern Convention, and has offered to pay twenty-five cents a pound for honey that is first grade according to those rules. M. M. Baldridge thought it would be better if Mr. Walker would state his objection to the rules. Mr. Walker has done so through the columns of the *A. B. J.*, and I take pleasure in copying what he has to say in criticism of the aforesaid rules :

"I am free to confess that I do not regard these "rules" as above criticism; still, considering the fact that they were gotten up and advocated in the convention by parties who do not make a business of producing comb honey, but whose chief concern would seem to be the profit that comes from the sale of these goods, they are not such a bad set of "rules" after all, and if the North American Bee Keepers' Association tones down the requirements of the first grade a few notches, then there will be some encouragement for comb honey specialists, who are favored with good locations, to attempt the production of some of that grade, during a good honey flow; otherwise they will do well to await the invention of appliances, or the breeding of a new race of bees adapted to overcome certain insuperable obstacles to their success, such as slightly soiled sections and comb surfaces.

It may be that some one will get up a machine for planing off the one or polishing up the other without damaging the goods.

It might not have done any harm, however, if some rule had been adopted that would at least hint at the grading of that large part of the crop that is marked by one or both of the defects mentioned, or that still larger part, which may be spoken of as considerably soiled in sections or comb surfaces, or both, and yet not *very much* so in either respect.

Perhaps it is unfortunate that the fourth grade, as suggested by Mr. Baldridge, was not adopted, as that would at least have made a place for them, while as the rule now stands, the first group referred to have not even been given a place beside crooked combs, which, not infrequently, cannot even be lifted from a case without gouging the combs.

Now let us see how this system of grading works. Suppose I have a quantity of choice white honey to grade. Here are a lot of sections taken from a T-super. The combs are as white as could be asked for, but although the sections have been carefully scraped with a sharp knife, I find that it is impossible to rid them of slight stains without cracking

the corners of sections in some cases, and cracking combs in others. Must these sections be relegated to a place in the third grade, with sections of dark honey less than three-fourths full, and not sealed at that?

Here is another group, perfect in every respect, except that a few cells near the edges of the sections are not filled, or if filled are not sealed. Must these sections also be excluded from the first grade?

A third group, in every respect like the last, except that, in order to secure the capping of these few cells, they had been left in the hive a little longer than the other, resulting, as is almost invariably the case, in a slight soiling of a small part of the cappings on one side of the combs. Must these also find a place in the third grade?

A fourth group is faultless in every particular, except that the combs are a little thicker than the average, and, therefore, weigh an ounce or two more; and a fifth group have combs a little thinner than the average. Must both of these be placed in the second grade?

The combs of a sixth group are not quite as straight as they might have been, but the sections can be lifted from the case without marring the combs. Must these be put in the second grade?

A seventh group cannot be found fault with, except that the combs are not firmly fastened to the bottom of the sections. Must these be banished from the first grade?

An eighth group is in all particulars as faultless as the best, only a few drops of light amber honey being noticeable, on close inspection, near the wood on one side of the sections. Must these sections take rank with dark, unsealed, half-filled combs?

Must any or all of the above be put in the second or third grades: and if so, why? Certainly not because they cannot be readily sold if placed in the first grade. Not one fancy grocer in a hundred will object to any one of them. This is not a mere assertion. Actual quantity sales that I have made to hundreds of leading grocers in many Western cities, year after year, ought to be sufficient proof of this assertion.

Personally I have no cause of complaint because of the rules in question, as I have no trouble in disposing of many times the 5,000 or 10,000 pounds that my bees produce each season, at quite satisfactory prices.

As I buy largely, if such rules were in force I would, in common with other buyers, profit greatly at the expense of producers.

Have the purses of comb honey producers become so full as a result of the last four remarkable seasons, and those of middlemen so depleted, that the former can afford to adopt a grading that will, in many instances, virtually confer a bounty of not less than ten per cent of their earnings on the latter?

Will it not be high time to adopt such rules when there is good reason to believe that the best interests of producers, as indicated by the demands of the trade, require them?

If we are to adopt a set of rules, I would suggest that not less than four grades are required, which might be designated as

fancy, choice, fair and common. Color could be distinguished by the terms white, light amber, amber and dark.

Without going into details, I would suggest that sections having only one of the defects above mentioned, should be placed in the fancy goods; those combining all of them are good enough for the second grade, to which also should be admitted sections where entire comb surfaces are but slightly soiled: also such combs as are only three-fourths sealed on one side, or the equivalent of one-fourth of the comb surface of one side unsealed on the two sides: also sections having the same amount of comb surface considerably discolored, as well as those having the wood soiled, but still not very much discolored, and those also having two or three cells of bee bread, but which would have otherwise found a place in the first grade.

Sections having the entire surface considerably soiled, or the equivalent of the surface of one side very much soiled, or an equal amount of unsealed surface, should be placed in a third grade: and those whose entire comb surface is very much soiled, and not sufficiently filled or sealed, or too defective in other respects for the third grade, but which contain not less than half a pound of honey, should constitute a fourth grade. As to whether color shall be made a basis for grading, is a matter of little importance compared with the placing of first grade honey where it will sell for third grade prices. As it is proposed to adopt rules for the Eastern States (where a great deal of fancy buckwheat honey is produced,) as well as the West, where such honey cuts but a slight figure, it will perhaps be best to grade without regard to color. But I fail to perceive how certain prominent apiarists, who were so fearful that a grading would be adopted which would debar this Fall-gathered amber honey from the first grade can be satisfied with the rule regarding soiled combs, for this rule will inevitably put nearly, if not quite all of it, in the third grade."

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may be found in the REVIEW office, the REVIEW best shows.

Since it became known that the REVIEW was "home made" many of its readers have offered it the job of doing their printing. While I have most thoroughly appreciated this kindness, I have been compelled to decline the work, simply from lack of time. Since enlarging the REVIEW I have found it impossible to set all of the type myself, while there is not work enough to keep a compositor all the time. I am obliged to depend upon "picking up" a man for a week or two each month. This is rather unpleasant, as I am obliged to put up with Tom, Dick and Harry and sometimes I have trouble in finding even these. For these reasons I have decided to keep a man all the time and then do job work that he may be kept busy when not at work on the REVIEW.

Now, friends, if you wish for good printing I shall be glad to do it for you. Nothing will induce me to send out a poor job, but if you want nice work and are willing to pay for it (not an exorbitant price but what it is really worth) I shall be glad to hear from you.

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This book is now "out" and ready for delivery. It contains 88 pages the same size as those of the REVIEW. It is bound with enameled paper tinted to resemble perforated zinc.

It begins with The Care of Bees in Winter, and then tells how they ought to be cared for in the spring in order to secure the workers in time for the harvest. Then Hives and their Characteristics, Honey Boards, Sections, Supers and Separators are discussed. The best methods of Arranging Hives and Buildings and Shading the Bees are described. Varieties of Bees, Introducing Queens and Planting for Honey are next given a chapter each. Then the Hiving of Bees, Increase, its Management and Control, and Con-

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12-91-127 *Please mention the Review.*

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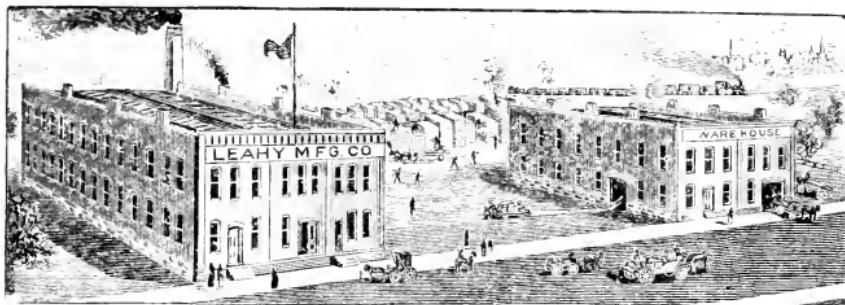
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1852.

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1891.

FEB 10, 1892



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Doctor Smoker,	3½ inch,	\$2.00
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One of the Largest Bee-Hive Factories in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

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All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue.

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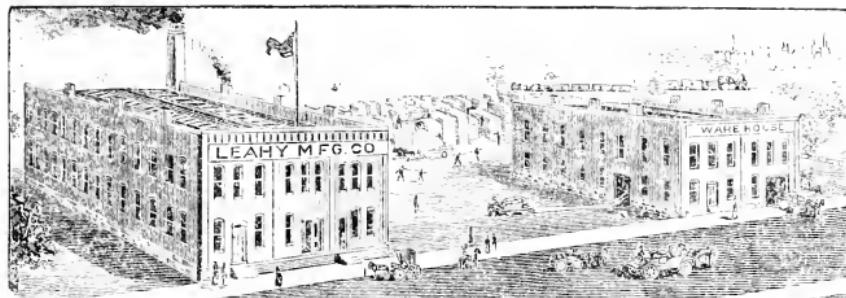
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The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically and according to states; and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.50 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly, in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. Each list furnished will be copied in to a book, and blank spaces left for the writing of additional names.

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Being the cleanest is usually worked the quickest of any foundation made.

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ADVANCED BEE-CULTURE;

Its Methods and Management.

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PRICE of the Book is 50 cts. The REVIEW and the book for \$1.25. Stamps taken, either U. S. or Canadian.

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142-143. WM. H. BRIGHT, Mazeppa, Minn.

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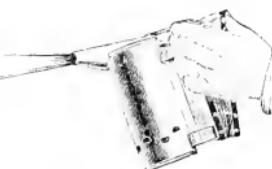
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P. S. -Send 10-cent stamp for "Practical Hints
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Smoker burns hard wood chips without special preparation. Very reliable. Greatest smoking capacity. Easiest to start. Cheapest because it saves time. Price, \$1.20. By mail, \$1.40. Per dozen, \$16.80.



Best Bee-Feeder. Most convenient. Saves feed. No daubing or drowning. Two to seven feeders full may be given a colony at one time which will be stored in the combs in ten hours. Price, per pair, 30c; by mail, 40c.; per dozen, \$4.00. Has a sale of 2,000 per month. Address A. G. HILL, Kendallville, Indiana.

These smokers and feeders are kept in stock by Thos G. Newman & Son, Chicago, Ill.; G. B. Lewis & Co., Watertown, Wis.; W. H. Bright, Mazeppa, Minn.; Chas. Dadant & Son, Hamilton, Hancock Co., Ill.; E. Kretzmer, Red Oak, Iowa; H. McWilson & Co., 202 Market St., St. Louis, Mo.; F. H. Dunn, Yorkville, Ill.; W. D. Soper & Co., Jackson, Mich.; Chas. A. Stockbridge, Ft. Wayne, Ind.; A. F. Fields, Wheaton, Ind.; W. S. Bellows, Ladora, Iowa; E. F. Quigley, Unionville, Mo.; Gregory Bros., Ottumwa, Iowa.

Please mention the Review

SECOND HAND SUPPLIES.

I have no desire, whatever, to go into the supply business, but my brother Elmer has sold the old place and bought a newer, larger one in an adjoining county and the bees that he has been managing for me on shares have been brought to Flint. This is a poor honey location and I shall devote the apiary to the rearing of bees and queens. I shall try raising some honey, enough to keep my hand in and for experimental purposes; but I would be glad to sell most of the comb honey fixtures even at about half price.

There are 100 old-style Heddon surplus cases at 20 cts. each; 50 slatted honey boards at 10 cts.; 50 wood-zinc honey boards at 20 cts.; 40 "dummies," for contracting the brood nest, at 3 cts.; 20 Heddon feeders at 40 cts.; 12 square, 60 lb. jacketed, tin cans at 25 cts.; 1 Whitman fountain pump, \$1.00; B. & H. uncapping knife, 75 cts.; steam wax extractor, Root's make, with copper bottom steam generator, \$1.50; Root's solar, wax extractor, \$1.50. All of these articles have been well cared for and are practically as good as new.

I also have 200 new, one-piece sections at \$3.00; 2000 four-piece, white poplar sections at \$1.00; 25 lbs. light, flat bottom foundation (Van Denisen) at 60 cts.; 75 lbs. brood foundation, Cary's make, extra fine, at 45 cts.; a new, Stanley, automatic honey extractor, two baskets and each basket will take two Heddon frames or one each of the Langstroth, American or the Quinby frames, price \$15.00; Young America lawn mower, \$2.00.

I would sell any of the above for cash, or I would exchange them for extracted honey or for young, laying, Italian queens. I am offering them now, because I have learned that the time to advertise is in advance of the demand.

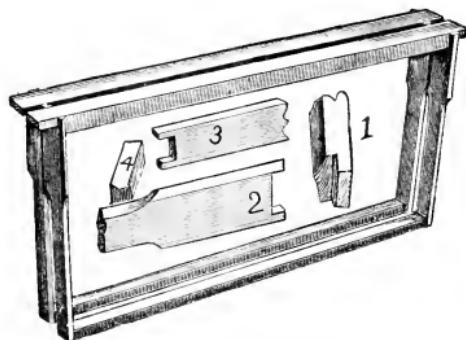
W. Z. HUTCHINSON, Flint, Michigan.

DID YOU KNOW THAT

Fixed Frames are the Rage?

Well, the question with many is, which one to adopt. After offering for sale several styles, our customers have almost uniformly elected in their orders the justly popular

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For the Langstroth, or any Hive of that size, such as the Dovetailed, they are unique, ionably the best. They are not s'uck up with burr combs, are self spacing, the most rapidly hand led, and alw'ys ready for rough handling, such as for shipping and moving to out yards. The top bar has a moulded comb guide as shown, and is 14-32 in. wide and $\frac{1}{2}$ in. thick. The end bars are widened at the 'top, and on one side are brought to a blunt knife edge. The bottom bar is $\frac{1}{2}$ in. square, so the bees will build their combs down to it. Queens can't hide between it and the comb, and it does not catch and roll over the bees in drawing the frame out of the hive. This frame costs a little more than the old style thin top bar frames, but, Oh, my, how much better! As a good frame will last a life time, get a good one. Price \$1.70 per 100; \$15.00 per 1,000.

OUR DOVETAILED HIVE,

In fact all our Hives complete, now have the New Hoffman Frame with the other inside furniture. Although the new frame is more expensive we put no the hive combination at the **SAME PRICE**. Speaking of the DOVETAILED HIVE, remember we were the originators of this Hive, and are the only ones who have put any substantial improvement's on it. We are now on' selling all our other hives put together. If you want the latest as well as those made up in some new and expensive automatic machinery on which the dovetailing is a **CLEAN CUT**, buy of us or our dealers. Send for our 52 Page Catalogue of Bee Supplies which will give full particulars. The information in it will be worth much to you.

Please mention the Review.

1892.

Don't you want large, beautiful Queens, producing Bees that will just please you fully? Well, my Italians are in the lead, so my customers say. 1,048 queens sold and have heard of only two misnamed. Orders booked now and will be filled in rotation. 10 per cent off on all cash orders received during January. Warranted Queen \$1.00; 6 for \$4.50. A select Breeding Queen, yellow to the tip, \$2.00. Will begin shipping May 1st.

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Bee Hives, Sections, Etc.

We make the best goods and sell them cheap. Our sections are far the best in the market.

Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

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12-91-8t

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Send for price list of Italian queens, drones, hives, smokers, foundation, etc. Queens, after March 1st, finest breeders, \$4.00. Tested, \$2.00. Three tested for \$5.00. Untested, in April, \$1.00 each. Six for \$5.00; or \$9.00 per dozen. Orders for queens, booked 20 days or more, five per cent. discount. Safe arrival by mail guaranteed. Make money orders payable at Clifton. 2-92-37

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Beauty,



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Send for circular and learn what others say about the five-banded Italian Bees. Queens \$1.00 six for \$5.00. Queens ready to mail June 1st.

J. F. MICHAEL,

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The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V.

FLINT, MICHIGAN, FEB. 10, 1892.

NO. 2.

**The special topic of this issue is
Writing for the Bee Journals.
That of the next issue will be
A Continuation of the Subject.**

Why and How Honey Should be Graded.—

**Why Color Should be Considered
in Grading.**

J. A. GREEN.



THE establishment of a uniform system of grading honey is, undoubtedly, a matter of very great importance to honey producers. In the production of honey, whether the bee keeper follows general rules

or adopts plans peculiar to himself, is of little consequence to others; but when his honey is placed for sale on the general market, the general good and justice to all demand that some uniform system of classification be adopted.

Upon what shall our system of grading be based? Shall it be appearance or quality? To what extent shall other points be considered? Whose interests shall we chiefly

consider—the producer, the jobber, or commission man, the retailer or consumer?

Let us analyze the different systems proposed, point by point, and see, if we can, on what they are based, wherein they agree, or in what they differ, and in what, if anything, they are lacking.

First, as to the number of grades. The Chicago convention adopted only three grades of the system proposed, leaving it incomplete. The Albany rules, though they begin by stating that "Honey shall be graded in two grades," provide for three grades of white honey, besides putting buckwheat honey in a grade by itself. This last provision is entirely too local to find place in a national and uniform system of grading, unless we endorse what is already a custom to a large extent of calling all dark honey buckwheat.

There is a large and increasing number of dealers and consumers who want only the best, and who are willing to pay an extra price for it. The skillful honey producer can produce a considerable proportion of honey that will satisfy this demand. For this he can, and ought to, receive an extra price. There should therefore be a grade that approaches perfection, and the first grade of the Chicago system is not at all too exacting in its requirements for this purpose.

Next to this should come the great bulk of choice, salable honey. Below this should come honey which is of good quality, but which from any cause is less attractive in appearance. Lastly, there should be a grade

in which to place honey that is distinctly inferior in quality or appearance.

Now, as to the names of the grades. I suspect that the reason why some objected to a ruling which required white cappings in the first grade was that they were not willing to admit that first class honey could not be produced in their neighborhood.

So there are many people who can hardly be induced to buy an article, however great its intrinsic worth may be, if its name indicates that it is "second" in grade or quality. Let them suppose that they are getting the best and they will be satisfied with it. That grade of honey, therefore, that there is most of, should be taken as a standard from which the grading should run both ways. Above this standard, names will probably prove most suitable. For the lower grades I have always used numbers. Considering the objections to this I thought well of the Albany system of using letters, but I must confess they sound awkward.

Now let me examine some of the minor points, using the Chicago rules as a basis. "All sections to be well filled." This is a reasonable requirement, found in both systems, and should apply to the two higher grades. Well filled sections look better and sell better for several reasons. "Combs straight." This, too, is right. Irregular combs are an annoyance and source of loss to the dealer, and seldom reach the consumer in perfect condition. Combs with straight, flat surfaces look better than those which are irregular. Moreover, most dealers prefer to sell sections of honey by the piece instead of by weight: so, for the highest grades at least, I would add to the words "of even thickness," and "of nearly uniform weight." "Firmly attached to all four sides." There is a chance for disagreement over the word "firmly." If combs fill the sections well and are attached to all sides they are apt to be firm enough for all purposes. A section in which the comb is not attached to the bottom is far more liable to injury in handling, especially if it is of the four-piece dovetailed variety. I have seen many a section smashed by lifting it by the bottom, which immediately proceeded to come loose.

It is well enough to demand that honey for the highest grade shall be free from any discoloration of wood or comb, but a slight discoloration of either should not disqualify it for the next grade.

For the highest grade, all cells should be sealed, partly because such sections look better and partly because unsealed cells containing honey are always liable to leak and daub things, especially if the section is turned over so that the honey can run out. There is no danger from this source if the honey has been properly ripened and is then kept in a warm room, but as this last is a condition we cannot always secure, it would be well to insist for the two higher grades that if any cells are unsealed, they shall be empty, or if they contain honey it shall be so thick that it will not run out.

We come now to the question of color, a point on which there has been some disagreement. Now what do we want a system of grading for? Is it simply from a love of order, a desire to put things in their right places? Or do we want to put honey in different classes according to its comparative salability in order to place the business of buying and selling upon a firmer and more uniform basis? I think the latter.

For whose benefit do we grade, and upon what does the salability of honey depend?

Neither we as producers or the jobber or commission merchant or the retail dealer care anything about the honey we deal in except that it may be easily handled, please the consumer and sell for a price that will leave us a satisfactory profit.

What does the consumer demand?

First of all, most of all, and beyond all, that the honey shall *look* nice. If it satisfies the eye he cares little about the flavor, provided, of course, that it is not flavorless, as some honey is, or has not an actually disagreeable flavor.

I used to try to educate my customers to distinguish the different kinds of honey with a view to giving them what they liked best, but I have given it up in despair. As a rule they know little and care less about distinctions in flavor. In selecting honey, nine times out of ten that will be preferred which is whitest in color, and customers are frequently willing to pay several cents a pound more for this extra whiteness.

Then, since the price and the salability depend on the color and appearance, why not make these the basis of our system of grading?

It might add a little to the convenience of the jobber and the retail dealer to have light and dark honey kept distinct, and each graded by itself, but it would not enable us

to get any more for the best dark honey than for a second or third grade of white.

The adoption of the note and fourth grade proposed by Mr. Baldridge would very much improve the Chicago system of grading, as with them there would be only twelve grades of honey, whereas without them there may be grades almost without end.

The appearance of the case containing the honey should certainly be taken into account in establishing the grade. There should also be a ruling in regard to sections containing pollen. I have never been very successful in selling honey when the sections were not well filled and sealed. If incomplete sections are put on the market at all they should go in the lowest grade, and had better be kept by themselves.

DAYTON, III.,

Feb. 2, 1892.

The Grading of Comb and the Grading of Honey.—Necessity for Marking Cases.

M. H. MANDELBAUM,

(With S. T. Fish & Co.)

ABOUT thirty members of the Northwestern Association were in attendance at the convention in Chicago, and that so small a proportion should be able to draft a set of faultless resolutions, seems improbable. On the last day, in fact the last two hours before adjournment, the resolutions on grading of honey were adopted. Our president, Dr. C. C. Miller, then congratulated us on having accomplished so much. The resolutions were referred to Albany for revision, and I, as mover of such motion, am disappointed with the progress there made. The question arises, what shall we now do to accomplish our aim? Let us all unite and send our ideas to the bee periodicals. We can accomplish nothing by delay, and I am of the opinion that we can gain our point before it is time to harvest a new crop.

Should not the plan be to first adopt "grading of honey," then decide on the topics, "size of sections," "size of crates," "style of package for extracted." These four points can be argued pro and con, and our leading editors then frame their adoption. When we have accomplished this, we are in shape to cope with such an enemy or evil as "adulteration," and seek a wider field for "uses of honey." We must first

seek perfection in our own midst and then remedy outside faults. Delay is useless, so everybody to arms. That we may not be successful in finding perfect laws, I am convinced, but do we not grade two of our most widely handled farm products, viz., butter and eggs? At times, not often, buyer and seller cannot agree as to grade, and arbitration then decides. This can also be done with honey.

What benefit can we derive after adopting a set of rules? Every producer and merchant could have a copy. This would prevent shipments of honey to market that are unsalable, and would permit of exact quotations. I will not advance arguments, but if any discussions are contrary, will answer and endeavor to show merit to my views.

I will divide the topic in two. First, grading of comb; second, grading of honey. And for the former I cannot improve on those rules adopted in Chicago, except that I would call the first grade "Fancy;" the second, "First;" and the third, "Second."

Grades for honey I would have as follows: *Extra White*, being water white; *White*, being what the word implies; *Extra C.*, straw color; *C.*, being between straw and dark; *D.*, being dark.

For explanation to above key notice the following example: An apiarist writes, "I have ten cases first grade white basswood, five cases fancy extra C. linden, or twenty cases second grade D. buckwheat honey," and by referring to list we know exactly how to respond.

All of our grading will be of no avail unless producers mark on end of case both quality and grade, as, for example: 1st, X. C., Linden; or, Fancy X. W. Clover.

Each package of extracted to be branded, as, for example: X. C., Sage; or, X. W. Alfalfa.

When the above is accomplished and every package marked as to grade and quality, with the gross and net weights underneath, it will be a pleasure to show honey to buyers. But with no system and every shipper using a different style of packages and sections, we have no uniformity: instead we have extra labor that could be prevented, with but little work on the part of the producer. Let the opposition or advocates of this topic act at once, and we then are ready for the next question.

CHICAGO, III.,

Jan. 25, 1892.

Have a Garden, Poultry and a Cow.—Advantages of Frugality and the Consumption of Your Own Products.—A Picture of Pioneer Life in Minnesota.

B. TAYLOR.



tions: and in so doing I will give my own experience. I know of no better plan, and I would adopt the same course if I were commencing again at the start.

A majority of young people that commence bee keeping are in that stage of life's experience when they commence cultivating "love in a cottage," and have a family to provide for. I see that several of the writers in the December number hint that a little land to cultivate would be a good thing. Well said, good friends. This thought is the key to the best practical plan I know of for a man of small means to bridge over seasons both good and bad, and is just the plan I have used to keep the wolf from the door through thick and thin.

The second year after coming to Minnesota I lost in a great flood all the wealth that I brought with me. I had nothing left but four acres of land and lumber enough to build a shanty. That was in 1857. I worked out for others enough to get a few nails, built my shanty, cleared and broke my ground, and bought one swarm of bees. I had previously had several years' experience in handling bees, in Wisconsin. I increased the one swarm to six the first year. The second spring I placed my bees upon their stands in good condition and planted my land to corn, potatoes, beans, peas, beets, squashes and other vegetables too numerous to mention. I cultivated them in the cleanest manner possible, and raised enough food of all the substantials to more than provide an abundance for the family. No famine there that year. The same spring I procured 700 strawberry plants of the Early Scarlet

In the several articles in the Dec. number of the REVIEW on tiding over in poor years, I find no remedy very definitely stated, and, with the editor's permission, I will continue the question, by trying to give a little more definite instruc-

variety, planted them in hills, and cultivated them as a lover would cherish his sweetheart. I kept all the runners pinched off, so that by fall each plant covered one foot square of land: covered the plants with plenty of forest tree leaves just as winter set in. I gave them suitable attention in the spring and before the tenth day of July we had picked ten bushels of splendid berries from them. The neighbors looked at the red mass of splendid fruit on the vines and began to inquire what I would take for some plants of that variety. I raised and sold them some fine plants at a fair price. We had more strawberries than we could eat, sold some of them, and this furnished a little money to buy clothing and other things. I went to the woods the same year and dug 150 plants of the common wild black cap raspberries, planted them in four rows of thirty-seven plants each, cultivated them in first class shape, drove stakes every ten feet along the rows, nailed poles along the tops of the stakes three feet from the ground, trained the vines over them and picked twelve bushels of splendid fruit from them the second year. Friends and neighbors wanted some of this fine variety of raspberry. I raised the plants and sold them at a moderate price and made many sales. I increased my bees that summer to thirty-one colonies and sold the honey for \$175.

I forgot to say that the first year right at the start I built a neat little house for poultry, made it warm, stocked it with a dozen or two of Light Brahmas, provided them with suitable nests, fed them well, kept the house scrupulously clean, and we were never out of one of the best articles of food, eggs, the entire year.

The cow? Yes, I made some bedsteads for a friend and exchanged them for a good cow. I gave her warm, clean quarters, and the corn fodder and other surplus raised on part of my land supplied her with feed, and we had plenty of milk and butter to go with the strawberries and potatoes.

The third year we moved one and one-half miles to where I am now writing, where I repeated my first plan. We have been here twenty-eight years and have grown butternut trees from mere whips three feet high until a single tree produced twelve bushels of nuts, and cast a shadow, at noon, forty-two feet in diameter. And we have pines raised from stock of which I carried twenty-five in my arms at once. They will now

measure seventy-five feet in height and twenty-two inches through the trunk. This place I call "home," and my pines are just a *little* greener than those found elsewhere. No, a rolling stone does not grow nice trees nor make a nice home: find a good place and *stay there*.

Several little mounds mark the hills near by. We call them graves. Our dead. What a terrible thing is poverty and its consequence, ignorance. With more intelligence our loved ones might now be rejoicing in health and strength. We should learn to *live*, not to die.

I continued the practice of raising pretty much what we needed to eat, and we still practice it as carefully as at first, although I increased my bee business until I produced twenty-six thousand pounds of comb honey in *one year*.

In this age, grab games of one kind or another get away with more than half of all we earn, when we sell the products of our labor through the regular channels of trade, but when we raise a crop of potatoes, beans, or other foods, and then *eat them at our own tables*, we get the whole result of our labor. Yes, we should produce all we can to supply our natural wants, and then consume it. This would go far toward settling the question of trusts and monopolies, for trade is what monopolies feed on.

I struggled many years with the idea that we need to be rich in worldly goods. I failed to realize my expectations, but finally became rich by finding that we do not need a great quantity of material things. Simple habits and self-denial give better results in contentment and happiness than over-abundance and luxurious gluttony. It is about time that we comprehend that, under existing conditions and social practices, it is impossible for honest labor to win a fortune in material things. The reason a rich man cannot get into the kingdom of Heaven, is, because Heaven is a *condition*, not a *place*: it is justice, love, mercy and charity, and the only means of becoming a millionaire is by violating all these principles.

Another way to help in bad years is to save what we earn in good seasons. Ten cents saved each day for fifty years and properly invested, will make over \$9,000 in that time. What a snug fortune for old age. Beer drinkers and tobacco chewers and smokers consume large fortunes in a lifetime by their immoral habits. Don't take one of Brother

Root's smokers: just think of the home that this bad habit would pay for in fifty years, and quit without being hired. A family that uses coffee in the average way for fifty years will have consumed a fine mansion. Water is God's drink, coffee is the devil's amendment to it. In the things that experience and science have discovered that our physical and mental well-being demands, I will have, if I can get, without regard to cost; but, happily, these necessary things are very cheap. Don't buy too many new things for the apiary. There is not as much difference in hives to the bee keeper as to the manufacturer. The attempted introduction of fixed frames will do great harm to bee keepers. It is easy to see that the leaders in introducing the Hoffman and other fixed frames are becoming badly mixed. I have always made my own hives and fixtures and would advise others to do so as much as possible, and strive to do all your work of every kind in first class fashion. I had almost forgot to tell that going in debt is the road to the poor house. Keep out of debt.

FORESTVILLE, Minn., Dec. 30th, 1892.

Criticisms on Hasty's Sugar-Honey Article.

C. C. MILLER.



I AM exceedingly sorry that you did not wear out some of your editorial pencil in crossing out all but the last paragraph of Hasty's article in December REVIEW. I have too good an opinion of Hasty to think that he had any but the best motives in writing what he did, nevertheless I am persuaded that evil and only evil can result from it.

Suppose that it were possible to have the bees make good honey from sugar, don't you suppose that all the profit derived therefrom would be more than counterbalanced by the prejudice awakened in the minds of consumers? But have you any idea that there's anything in the idea, even if it could awaken no prejudice? In this case, it would have been wise for Hasty to have reversed his motto, "After agitation comes experimentation." Indeed, I don't believe the

motto is true. Hasty didn't agitate the matter of confining swarms in miniature cellars before he commenced digging holes in the ground. In most of our important improvements—the movable frame, the extractor, foundation, etc., did not experimentation precede agitation?

Now, if Hasty thought he had a good idea, he might better have first experimented thereon, and after he had got a pound of good honey—just one pound—then it would have been time enough to have agitated the matter just so far as to confer privately with one or more of the fraternity as to the advisability of letting his secret die with him.

Hasty is a delightful writer. I read with interest everything that comes from his pen, but in this instance he acted without careful forethought, in my opinion, and—begging your pardon—the editor was guilty of criminal lack of scrutiny in admitting the article even from so good a man as Hasty. Do my words sound harsh? Please believe me, they are said more in sorrow than in anger, and with a warm feeling in my heart for the two men I condemn.

MARENGO, ILL., Jan. 4, 1892.

Mr. H. R. Boardman, of East Townsend, Ohio, writes as follows:—

"Oh, why did you publish that nonsense of Hasty's about making comb honey from granulated sugar?

Have you so soon forgotten that 'Wiley pleasantries,' that cost the bee keepers so many years of hard fighting to 'down'?

It cannot fail to be misleading and damaging to the bee keeping industry, and I protest, as I hope every wide awake bee keeper will, against giving such *stuff* to the public."

J. P. Smith, Sunapee, N. H., sends in the following:—

"I enclose \$1.00 for another year, beginning with the present month. This I do under *protest*, said protest being caused by the publication of the article of E. E. Hasty in the Dec. REVIEW, and having the approval of your silence. When such an extensive honey producer as Mr. Hasty, under the silent approval of yourself, a professional reviewer of erratical bee-lore, sends broadcast among your subscribers such views, it is time for somebody to move *slowly*.

I don't know any way that we can take a *candid* look at anything so 'shockingly heretical' as the advocacy of feeding sugar to obtain comb honey to ornament the tea table.

If that article is an outgrowth of 'Advanced Bee Culture' then give me the 'be-nighted Africa of book-beedom.'

Now, friend H., I deem it your duty as a professional reviewer to review that article and set it right. Thousands of bee keepers are ready to catch on to the ideas advanced there. With sugar at about four cents, who cannot foresee the demoralization of the honey business that this foreshadows?

We look to the bee journals as watchmen on the walls, to guard our interests and sound the warning note against the first attempt to adulterate our highly prized product. Without exception we have found them true to the trust, and active and outspoken in hunting down anything akin to the 'Wiley lie.' Never before have I seen a bee paper disgraced—(pardon me)—by advocating adulteration.

Now, frankly, if this has any more encouragement, nay, if it is not rebuked, you need take no pains, at the close of this year, to ascertain why my REVIEW is stopped."

That honey produced by the feeding of sugar would be just as wholesome, just as handsome, and just as well relished as that made by the feeding of honey, there is not a particle of doubt. When feeding sugar for winter, I have sometimes fed it early, and somewhat slowly, as friend Hasty suggests, and the combs have been so white and tempting that I have frequently cut out a small piece with my knife and eaten it. In doing so I have been surprised at the *honey taste* it possessed. There was the oily, rich, mucilaginous, twangy, honey taste, caused by the chemical (partially digesting) action of the bee's secretions. It also had a sugar flavor. In short, I would call it sugar honey in the same sense that we speak of basswood or buckwheat honey. I should certainly prefer it to the latter. Now, these are *facts*. Why attempt to conceal them? Those who were ready to hold up their hands in holy horror at the mention of "less talk about adulteration," are the first to advise silence in regard to the *fact* that comb honey might be produced at a profit by the feeding of sugar.

While I have not a particle of doubt that a bee keeper experienced in "feeding back" could, with sugar and honey at the present prices, raise comb honey at a profit by the feeding of sugar, I am not yet ready to advise such a course, even if customers were informed in regard to the matter, as mentioned by Mr. Hasty.

The publication of the Hasty article has been compared to the Wiley pleasantry. What Wiley wrote was a LIE. What Hasty has written is *true*. No one disputes that. The only question is, whether it was policy to *tell* the truth. I presume that the publication of that article in the general newspapers of the day might be prejudicial to the interests of bee keepers, in the same way that the "everlasting clack" in them about adulteration prejudices the public against honey; but among *ourselves*, in our own family, in our own class journals, it does seem that a man might speak his mind freely.

Of course, what friend Hasty has written is the rankest kind of heresy, and I may be equally guilty in giving it publicity, yet it must be remembered that we little know what may come in the future. Heretical ideas are usually advanced ideas, shocking as they sometimes are, and as editor of the REVIEW I feel like allowing free speech, so long as it is said decently and in order.—ED.]

Comments on a Beginner's Day-Book.

No. 2.

E. E. HASTY.

MY purchase of the apiary was in October, and on that account I would have preferred to begin my extracts and comments at that date: but then, you see, I should be forever dragging a few months behind the date of the REVIEW which each article appeared in. It is nicer to read of February matter in February. So I skipped down Honey Creek the distance of three moons, and soused in opposite the calendar. The calendar, however, don't amount to so much as usual, the winter of '79-'80 was so abnormal. Winter just took a little nibble at us once in a while, as appears in the following:—

"February 3d, 1880. Snow storm. Thermometer 25°. Entrance of the colony 4-3 found closed with SAWDUST."

"Four-three" means fourth group of hives, third hive in the group. This is the "only right way" to number hives, because the whole thing can be kept in the mind with ease, and there is never any occasion to paint or tack figures on hives or stands. Permanent figures on hives soon result in unpalatable "pi" by the ensuing changes of location.

This entry opens up the sawdust question by a slight objection not often spoken of.

Sawdust drifts in windy weather, and may bank up things you don't want banked up. I wonder if the method of placing hives on banks of sawdust is not declining. I adopted it enthusiastically from *Gleanings*, and have never entirely abandoned it; but with the years I find I am less in conceit with it than formerly. If I was beginning in a new location I am not sure I should use the method at all. The danger of fire is worth avoiding; and the friendly harbor sawdust offers for a mouse den under each hive I do not like at all.

"Feb. 10th. Thermometer rose to 50°. Since the third it has been moderate winter weather. Overhauled six colonies. Brood mostly hatched out. Some eggs and larvae."

"Feb. 11th. Froze at night, but thermometer 50° to day. Bees have not sufficiently recovered from the cold spell to fly much."

These entries, with previous ones, show how nicely bees can adjust themselves to untimely weather. They can raise a batch of brood in mid-winter, and then shut down on brooding until the weather again offers extra inducements. They again had considerable brood Feb. 18th.

The latter part of this month was largely devoted to making "many inventions," some of which I have in use clear down to the present day. My day-book is ornamented with rude drawings of them which of course I cannot transfer to the REVIEW. The simplest of them all is perhaps the most generally useful of all. It is a hive shovel, originally designed to scoop the dead bees and rubbish out of a hive when only two or three combs are removed. The shovel is at right angles to the handle, and you can narrow it down and scoop in very narrow quarters. The handle should be from four to twenty inches long; and at the lower end say three and one-half inches wide, for medium size. For the shovel part a suitable piece of tin goes over the lower end just in the style a Shaker bonnet goes over your lady's head. I keep three of them: a little "teenty" one, a medium one, and a big, bouncing, fat one (not ladies, but hive shovels), and, although useful in cleaning hives, I use them a great deal more in living bees and capturing swarms, especially in scooping a cluster from a difficult location, as the side of a tree trunk.

Then there was my perpetual mouse-trap which was described and illustrated on page 164 of *Gleanings* for April, 1880. The object was to have bee fixtures, when stowed away, defended from being gnawed, and from being ruined by ineradicable mouse smell, by a trap which would be always set, baited,

and waiting for a victim. The trap was a success; and yet (alas, the world is full of just such discrepancies!) after twelve years I find myself using the common wire mouse-trap instead of my own. As for our fixtures and little "ginger-bread-work" when stored away, the proper way to keep them from mice ("only right way" again) is not by traps of any kind, but by having them stored in a separate little building, and *by making sure that not a mouthful which a mouse could possibly eat is anywhere near.* Not even a mouse will stop where one has to subsist on naughtiness alone without rations.

Another of these February inventions was what I called the Tinker's Treasury. This was designed to put in very small compass, easily carried wherever tinkering was to be done, as nearly as possible all the tools and hardware a universal genius would want. It is about fifteen by thirty inches in size, and five inches high—nine inches high where the center wall and hand-hole comes up. At the bottom are two drawers for little tools and things. In the ends are twelve deep pockets for long nails and slender tools. The top of one side has twenty-five movable trays for wire nails, brads, screws and rivets. The other side has twelve larger trays for larger ware. The tinner's shears and big hammer, they ride a-top the center wall. This polyglot utensil is still in use and good repute—and so popular with other tinkers besides myself that the trays are prone to be empty.

The blooming failure of the lot of inventions was a lantern. But as a lantern does not belong especially to apiculture, I'll just plead that I failed by getting out of my profession.

"Feb. 22nd. Weather moderate. Alder's begin to yield pollen. Pollen grains very light yellow. Power of my microscope not sufficient to see the precise form of the grains—somewhere between a sphere and a cube."

This entry shows the beginning of an idea which I followed in after years until it "ran up a tree." When I purchased a tolerably good microscope it was largely with the idea of testing every sample of honey I desired to know about, and proving what plant it was gathered from by the scattering pollen grains floating in it. I assumed from what I had read that two different species of plants always had pollen differently formed, or at least with different markings. To observations no more minute than mine this is not exactly the case. The forms are wonderfully many and varied, to be sure, but there

are certain pet forms, so to speak, that recur often, and with so little variation that it requires more care than mine, or more lens power, to be sure of the species. One of these oft recurring forms is the nearly spherical form with the sides variously dented in, like raisins just dug from a keg. Another is the wheat-shaped grain—groove down the side and all. And when I came to turn from the examination of pollen which I myself had gathered to the examination of samples of honey from the hives, my scheme broke down altogether. It is nearly impossible to find a grain of pollen in honey; and if you do find one probably it did not come from the flower that furnished the honey, but got in somehow in the hive. The wonderful apparatus the bee carries for manipulating honey seems designed, among other things, to strain out pollen grains, and all other floating motes. On a little reflection we will perhaps conclude that this may be a rather important item in finishing up honey.

"Feb. 26th. Thermometer 63. Bees very lively; but 9-7, which I had shaded with a big door because they flew so much, **WERE ALMOST ENTIRELY QUIET.**

Here is a valuable hint, or one that would be valuable if semi-tropical winters came often enough to make it so. A shade-board big enough to shade both the entrance and the whole hive will keep the bees quiet much of the time when they would otherwise be flying and wasting their strength and days.

"Feb. 27th. Thermometer 64. Found the weak colony, 246, reduced to queen and some 300 bees. **Coroner's verdict:** too many combs—there were five. Repacked them on two combs, and turned them up chamber to save the queen. Entrance closed.

Lost my first colony, 1-4. **Coroner's verdict:** carelessness last fall and neglect to examine since. John called my attention to the robbing which had begun. Covered the hive with a tent and got the robbers out before much honey had been carried off. There were 200 bees or so left. No sign of brood, and few dead on bottom board. See 1-4 in Stand Journal.

Interesting observation. Saw two strong bees worrying a weak—perhaps young—one, and making him disgorge honey, which they eagerly lapped up."

This shutting bees in and taking them to a warm room is hardly practical when there is anything like a colony of them; but it will do when the bees are down to 300 in number—may keep the queen alive until you can find use for her. In this particular case they were very soon all dead. By the way, I counted them at the funeral, and there were only 186 instead of 300, a fair illustration of how beginners, and perhaps some who are not beginners, overestimate numbers. Had they been packed in the fall on three combs,

instead of on five, would they have lived any longer? Perhaps, but I am not sure. The modern doctrine is that a comb is just as good as a division-board: and therefore it don't make any difference how many combs there are in the wintering chamber. Perhaps this is sound doctrine, but I am suspicious of it.

For a tent to stop robbing no more is needed than a square of cheap muslin somewhat larger than a bed sheet. Lay it on the top of the hive in such a way that the edge where it rests on the ground in front of the hive will be two feet or more from the entrance. Wait till the robbers inside have had plenty of time to load up, and you will find them on the under side of the cloth: then quickly turn the cloth the other side up. A little dirt can be heaped upon the edges if there is any tendency to find a passage-way.

"Feb. 28th. Hot and sultry. Rapidly growing cold at night, freezing and blowing a furious gale. Ten hives unroofed, but apparently not harmed. Bee-clovers badly frozen and whipped."

One excellent minor quality in a hive is to remain tight and protect the bees after the roof has gone on the breezes. I have often had similar experiences since.

I had already begun my effort to shorten the tubes of red clover. This record shows that some of my experimental clovers had grown up rank and tender, winter though it was, just right to be sadly demoralized when "the wind of the winter night" broke in upon their Florida.

RICHARDS, Ohio,

Feb. 4th, 1892.

An Absolutely Perfect Grade Not Needed for

Honey.—Kind Words for the Review.

G. M. DOOLITTLE.



IT IS I was one of the committee that formulated the rules for grading honey, as adopted by the Albany Convention, perhaps the editor will allow me a few words in reply to his "leader" on that subject. As I remember it, the

reason that the Albany committee could not recommend the rules adopted at the Chicago meeting, was that their first grade

demanded something that was nearly if not quite an impossibility. Had the 1st grade called for "Sections to be well-filled, combs straight, of even thickness and firmly attached to all four sides, the honey of uniform color and the cells all sealed except perhaps a few along the line touching the wood," there would have been no trouble in our adopting it: but when we came to "both wood and comb unsoiled by travel-stain or otherwise, and all of the cells sealed," it seemed that we could not tolerate a rule that would not allow more than one section in a thousand to enter the grade.

I imagine I see many holding up their hands in "holy horror" at this, and I fancy the editor again expressing himself as he does in the leader, "I have certainly seen honey that could be classed as first grade according to the Chicago rules," but notwithstanding these expostulations I wish to reiterate, that if the *full import* of "both wood and comb unsoiled by travel-stain or otherwise, and ALL of the cells sealed" is taken in, not one section in one thousand will be found that will answer that description, taking our years as they average.

In that extra year, 1877, when honey came in as if by magic, so that I secured over 11,000 pounds of comb honey from sixty-nine colonies, spring count, I found that when I came to try for perfect sections, according to the above, nine was the full number that could be picked out of that 11,000 pounds. The little cherry crate, to which the Thurber gold medal was awarded, at that time, contained twelve sections picked from that 11,000 pounds, and as three of the sections could go in the crate so they were hid from view, the nine perfect ones, as above, answered, but had I been obliged to have had twelve perfect sections, according to the Chicago rules, I should have never received the gold medal.

No wonder Byron Walker offered twenty-five cents a pound for such honey. I said when I saw the offer, "He is safe enough."

We have two women near here that consider themselves good housekeepers. One of these spends all her time in hunting for specks of dust or dirt about the house, and is so particular that if a neighbor steps in, his boots are eyed to see if there is any dirt on them, and the family and all who come inside the house are made miserable, by the exacting nicety of this housekeeper. The other keeps her house *perfect* according to

the opinion of most of the neighbors, as it is always tidy enough for the full comfort of the family, and all who call, except this particular one spoken of above; but she says such housekeeping as neighbor A's wife does, is slovenly. I could not help thinking of these two women in reading your leader, and what Mr. Baldridge has to say, in *A. B. J.*, of the rules he formulated at Chicago. The rules of the Chicago convention represent the particular housekeeper, and if they ever become the standard, there will be mighty few people who will "walk into that house" on the first grade plank.

The rules set forth at the Albany convention represent the other woman, and if they are adopted, all but the particular ones may comfortably walk in. It will be remembered that four out of the nine of the committee at Albany were honey dealers. I think it was Mr. Corneil, of Ontario, Canada, who asked, while in that committee meeting, he being chairman of the committee, what the difference in price would be between a fancy article as described as first grade by the Chicago rules, and honey put up according to the rules adopted at Albany. The dealers replied that it would be hard to get over *one cent* per pound more for it, and if it were sold for that advance, it would have to be kept in a room by itself and not by the side of the rest, or what would become the bulk of the No. 1 honey in the market: and these figures seemed to agree with the experience of all on the committee who had tried the experiment of making a grade of honey which might be termed "fancy."

You say you "notice a disposition on the part of some to oppose the adoption of any grade requiring perfection," and then allow that "some" may mean those favoring the Albany rules. You are right, as far as many of that convention are concerned, for here at the East it will not pay us to make such a grade, as you yourself well know that a penny a pound would not pay for sorting out (using your figures for the perfection part) and carefully fixing up 500 out of 10,000 pounds. The difference in price between an article put up according to your outline as fancy, and that of the first grade, would not pay us apiarists here at the East, and that is the reason we are opposed to putting outer cases over our crates, sorting out a few fancy sections out of our pile, etc. We would rather sit down and read the REVIEW than spend our time in fussing in that

way at a loss, for the REVIEW is never read at a loss, or at least has never been so far, and we do not expect it will be, as long as W. Z. H. is at the head.

My way of putting up honey has been as follows: When all the white honey is off the hives, the pile is carefully sorted, and if the year has been a good one, about half the pile is put together as first grade, which will all come under the rule of first grade, according to my modification of the Chicago rule, given above. About two-sixths of the pile goes as second grade, and in appearance is about like second grade according to the Albany rules. The remaining one-sixth takes in all the remainder of the pile that is fit or profitable to market at all, and would come under third Albany grade.

In marking I use the letter X as suggested by Mr. Nellis, having adopted this plan of using it years ago. On the cases containing the first grade I put XXX, on the second grade XX, and on the third grade X. After years of corresponding with commission men, and much talk with different honey producers, I have not been able to see any paying reasons, I mean sufficiently paying, to cause me to abandon the course which I have been pursuing in the past; hence consider them good.

BORODINO, N. Y.,

Jan. 25, 1892.

Accompanying the above was a private note, from which I extract the following:—

The fact is, not one of the committee at Albany, on grading honey, agreed at all with those Chicago rules. I have tried, however, in the article, not to be prejudiced in the least, nor use any terms or language that should offend any. If extra nicey will pay you of the West, go into it, of course, but as it will not pay us here, it would not be reasonable to try to make what will pay you, bind us, whom it will not pay.

I wish to say to you that the Dec. No. of the REVIEW outdid itself: not simply for pictures, (they are an addition), but the matter it contained was of the highest order. All the ideas presented were logical, sensible, to the point, and as bright and clean as a "new dollar." Your new correspondent, Aikin, is a gem. That article of his, if fully comprehended, is worth ten times the price of the REVIEW for a year, to any beginner. With best wishes to you and yours, I am yours truly,

G. M. DOOLITTLE.

Follow No Advice Blindly.—Get Plenty of Supplies Early.—Advantages of Spring Protection.

R. C. AIKIN.



SINCE you desire that I tell the readers of the Review just how I manage an apiary from spring till fall, I will endeavor to do so. But I feel 'tis necessary to use the first article mainly as a prelude, for, by so doing, the reader

will better understand what follows, and at the same time I shall be able to condense, and deal more directly with the facts to be discussed.

Don't forget that an apiary won't always be "just so." Where is the apiarist—though he be old in the business—that has had all the conditions and management just the same for two seasons? Apiculture is a kaleidoscope: each season requires a management peculiar to itself. So I want each reader to remember that, no matter how sound may be the principles or system I may set forth, those principles must be applied according to environments, the peculiar needs of the location and the ends to be obtained. Don't attempt to follow any man's written or oral rules, verbatim. If you do, failure is almost certain.

The apiary that has been properly cared for in the fall will not need the same care in the spring as the one that goes into winter in poor shape. Our bees are by no means in proper shape now, (Dec.), for the stock was handled the past season by other parties, we having had possession only since Nov. 1st. Some are in the cellar, some on the summer stands unprotected. I would prefer all out doors, packed in chaff, with stores to last till May 1st, *without fail*. Had we had possession of the stock the past season, the bees doubtless would be so fixed now.

What we do from fall to spring has much to do with how we do from spring to fall. So now, (Dec.), we are just maturing plans for next spring and summer.

The questions that come up now, are, whether we shall produce comb or extracted. We shall do both. However, I believe that

the man who can produce a good article of comb honey, can also produce the extracted; but there are many exceptions when the rule is reversed, so we shall talk from a comb honey standpoint.

We will purchase our supplies, and have all hives and sections ready before the work comes on in the apiary, but we must decide how many hives, sections, and supers we will need. We may not need any, and we may need a whole lot, so the best way is to buy a whole lot, and be on the safe side. We don't count ourselves safe with less than four twenty-eight-section supers to each colony, spring count, or even more than that. Don't say 'tis too many, but read on until you get our whole plan.

February and March are usually disagreeable months for out-door work, so we aim to do most of our shop work during those months. We will put hives and supers together, fill the supers with sections, and have them all piled up, just ready to put on the hive.

Now just a few points on the matter of protection. Since this climate affords so much sunshine, we prefer the hives to face east, while packed for winter; thus, the entrance is shaded in the afternoon, and tends to prevent flights late in the day when many bees would be caught out in the cool evening air: besides, the afternoons are more changeable than the forenoons.

This chaff protection—or how ever protected—serves several purposes. It prevents robbers nosing around cracks and joints, so it does much to prevent robbing. Again, it prevents the sun shining directly against the hive, consequently it does not admit of so sudden rise in temperature, making the flights of bees more gradual, avoiding, to some extent, those sudden bursts of flight which often almost entirely depopulate a hive for the time being, if it does not result in absconding. But the greatest gain of all, is the gain in brood rearing during the spring. The bee keeper, to succeed, must keep ever "pecking away;" not by jerks and jumps, but regular steady work; so, to get good results in brood rearing, we want steady, regular work. This cannot be obtained where a colony is exposed to the changes of weather. When packed, the heat absorbed by the chaff keeps a more regular temperature, and brooding goes on without check: hence all colonies are better protected until they are strong enough to occupy the

entire hive and care for all the brood the queen can supply.

Having the stock so protected, we have but little work to do in the apiary till toward May. Occasionally, however, we go through the apiary when the bees are flying freely and look for signs of robbing. Should any colony show signs of being robbed, we close the entrance so but one or two bees can pass abreast. Occasionally a colony will be queenless, and such must be protected from robbers until they can be united with others. It does not pay to keep a queenless colony until a queen can be reared in the spring. The honey consumed by a queenless colony, at that time of year, is worth more in some other colony being converted into bees, or saved for feeding later.

Some time near the latter part of March or first of April, being guided as to that by the state of the weather and the apparent condition of the bees, we examine each colony to learn the condition of each one, as regards queens and amount of bees. Those that are queenless we unite with such colonies as have but few bees, and all are again snugly covered up, and a record of the condition of each colony is kept.

This brings me up to the time when spring work in the apiary begins in earnest, and so in our next we will enter more into the details of spring management.

LOVELAND, Colo.,

Dec. 31, 1891.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN, FEB. 10, 1892.

THE DOOR leading to success ought to be labeled "PUSH."

AFTER HAVING spent enough time, money and energy to produce results the equal of any in a certain line, why not spend some more time, money and energy in the same direction, and thus excel all others? Superiority brings both honor and profit.

R. L. TAYLOR's address at the Michigan State convention was the best and most comprehensive attempt to show how much honey costs, or *ought* to cost, that I have seen. While it was being delivered, Ernest Root whispered that I "Ought to make that subject the topic of a special discussion." What do the brethren think? Has any one any criticisms to offer on that address?

ADVERTISEMENTS CROWD OUT EDITORIALS.

The REVIEW never before contained so many large attractive advertisements as it has at present. Please look them over, admire them, and when you patronize those who are enterprising enough to thus make known their business, "please mention the REVIEW."

By the way, this rather unexpected increase in advertising, a large share of it coming in just as the REVIEW was almost ready to "make up," has crowded out two or three pages of those short editorials that I so delight in giving. Yes, I suppose I might have left out some of the correspondence, but it would be difficult to say what: as it is, several most excellent articles on the "Grading of Honey," and on "Writing for the Bee Journals," are left over for the Mar. issue. As no new topic is to be taken up next month, I presume there will be room for more editorials in that number; I hope so, as there are several subjects that I wish to notice.

EXTRACTED.

Impossibility of Grading Honey as Regards Quality.

Mr. J. A. Green very clearly points out, in an article in *Gleanings*, the difficulties in the way of grading honey in regard to color and *quality*. He says:—

"I must say that I am not at all satisfied with either of the systems of grading comb honey that have been proposed. That adopted at the Northwestern convention was rather too exacting in some of its requirements, and in some respects was incomplete. I think this would be admitted by a good share of those who voted for it. At best, it was a compromise adopted with the expectation that it would be further revised before being accepted as a system of grading. But while it placed the standard too high, I think the system adopted at the North American convention went to the other extreme. Any bee-keeper who is up to the times in the

production of comb honey can readily select, after a good yield from white clover, linden, or any other source of white honey, a large proportion of sections that are almost, if not quite perfect in every respect—such honey, in fact, as would be graded No. 1 according to the Northwestern scale. It pays to have such a grade; and any one who understands selling honey can readily get a fancy price for it. With this grade added I would not have much fault to find with the Albany system of grading.

There are excellent reasons for the establishment of a superfine grade of honey, and there are also good reasons for using names or letters, instead of numbers, to indicate the grades, though I have always used numbers for all but the best, which I call "extra select," following with numbers 1, 2 and 3. My system of grading might be formulated about as follows, using letters advocated by the Albany committee :

EXTRA SELECT.

Light-colored honey, of good flavor; combs straight, well built out, of even thickness, and nearly uniform weight, attached to the section on all sides; all cells sealed, with white cappings, and with both combs and sections unsmeared by travel-stain or otherwise.

'A' GRADE.

Light-colored honey, of good flavor; combs straight and well built out, with cappings white, or but slightly amber colored; one face of each comb perfect in appearance, fully sealed, except the line of cells touching the wood. The other side shall be perfect in color and sealing, or nearly so, and section not badly soiled.

'C' GRADE.

Honey of good quality. In this grade shall be placed all irregular combs, or those containing pollen, and all in which the capping is dark or considerably soiled. Sections must be nearly filled, with few or no unsealed cells.

M' GRADE.

In this grade shall be placed all honey of inferior quality, all combs containing much pollen, or badly travel-stained, or otherwise objectionable. Sections must be at least three-fourths full, with one side sealed.

The above is *my* system of grading—what I use in actual practice. I do not expect that it will satisfy everybody. In fact, I think we shall find it hard to establish any system that will be satisfactory in all parts of the country. This is evident when we see that the Eastern men want the saffron-colored comb of the Mississippi bottoms placed in the third grade, while the men who produce it insisted at Chicago that it ought to be graded No. 1. The Eastern men, too, want buckwheat honey graded by itself, though they do not seem to care about other kinds. I believe there is but little buckwheat honey produced in the West, though there are other kinds that deserve to be graded by themselves, quite as much as buckwheat. As buckwheat honey is well known to the trade, it might be well enough to keep it in a grade by itself, though no doubt much honey is sold as buckwheat that was never near a buckwheat field. But if we decide that there may be a first, second, and third grade of each kind of honey, as was voted at Chicago, we do away with one of the

principal objects of grading, and open the way to almost as many disputes and differences of opinion as were possible under the old system—or lack of it.

It will be difficult to make some bee keepers understand why their first class honey, gathered from autumn wild flowers, should bring a lower price than another man's second or third class clover, although the commission man understands it perfectly. Would it not be better to put it in the second or third grade on the start, and so class it? Again, it is indisputable that the selling value of comb honey depends more upon its appearance than any other one quality—provided, of course, it has not an actually disagreeable taste. The kinds of honey are legion. Unless a man is familiar with all these varieties, which is something hardly possible, how is he going to be able to make a guess at the value of honey offered him from another locality? Even if he is familiar with the kind of honey offered, there is much chance for misunderstanding, for the average bee keeper is very much at sea with regard to the sources from which his honey was gathered. Moreover, there are very few localities where any one variety of honey may be secured free from admixture. The varying nature of this admixture so changes the character of the honey, that what passes for white clover honey in one locality may be a very different article from the white clover honey of somewhere else.

If honey is graded according to my rules, and a sample of the honey sent in a small vial by mail, the purchaser may know just what to expect, or the commission man will be better able to inform the intending shipper what his honey will bring.

DAYTON, III., Jan. 8. J. A. GREEN."

Commenting upon this article the editor of *Gleanings* says:—

"On the first page of this issue, J. A. Green offers some good suggestions on grading. Before reading his article, however, our idea was to use the Chicago system as the basis, calling the first grade "Fancy;" second grade "A," and the other grades by the letters of the alphabet in their order. The Chicago scheme of leaving out *color* as a quality in each grade, we thought a good one, leaving the matter of color to be decided entirely by the *kind* of honey. For instance, a fancy buckwheat could come under the highest grade; but the name "buckwheat" would describe a dark honey. But perhaps there is a difficulty here. The general public, and many of the commission houses, probably would not know what is meant by "Fancy" or "A" grade smartweed or Spanish needle honey; and they would be utterly in the dark as to what would be their respective colors. The trade calls all white honeys clover: that is, it prefers to do so, as its customers are not acquainted with the many sources; but when a honey is described as "white," it has some significance. On the whole, then, we would indorse Green's system. It seems to be an improvement on both the Chicago and Albany classifications. We should be glad to

have this subject discussed further. It would be a great boon to bee keepers and honey merchants if a *national* system of grading could be adopted. It should be broad enough to be free from local interests, and yet be specific enough to cover every sort of honey."

Let Us Have One Grade that is Perfection.

Last month the REVIEW gave Mr. Byron Walker's objection to the Chicago rules for grading honey. Mr. Baldridge, who drew up the rules, has replied, through the *A. B. J.*, to those objections, and from his reply I quote as follows:—

"The main trouble with Mr. W. is, as I surmised, he does not like the instructions for grading honey as adopted by the Northwestern convention, especially for first grade. And why? Mainly because a large percentage of what has in the past been classified as first grade comb honey, by dealers and producers, would have to go into some other grade. Now, this is one of the reasons why those instructions were prepared as adopted. The intention was to stimulate bee keepers to produce as much first grade honey as possible, and to protect them in so doing. And this is as it should be. There are some who seem to think the instructions for first grade are too "superfine." But all should bear this fact in mind, namely, that words mean something—that first grade does not and should not mean second grade nor third grade—that it means "fancy," "premium," "gilt edge," etc., the same as in grain. Please examine the Chicago market reports on grain, and notice how seldom any sales are reported for first grade corn, wheat or oats. When comb honey is graded by as strict rules as grain, fancy poultry, and dairy products, and the fact becomes known, then the first grade will command a fancy price, say twenty cents per pound wholesale, and twenty-five cents to thirty cents at retail—no matter what the other grades may sell at. And why? Because there is always a class of consumers who are both able and willing to pay a fancy price for first class goods, and honey, as the writer happens to know from experience, is no exception.

Comb honey of the second grade should also be good honey—good enough for general consumption, and should command as high a price at wholesale or retail as what is now sold as "choice" or "fancy," for, in fact, if honestly graded as per instructions, it will average as well and perhaps better in general appearance.

I was in hopes that Mr. W., in his reply, would copy the instructions in each grade, and then analyze them separately, and point out their defects, if any. Perhaps he thinks he has done so in substance.

By this time Mr. W. may be prepared to give instructions for grading comb honey that will be more satisfactory than those adopted by the convention. If so, I hope he will send them along for publication, so others can see what they are.

ST. CHARLES, Ills., Jan. 11, 1892."

Are the Bees of Italy a Fixed Race?

This question is being again resurrected. Upon this point, W. C. Frazier makes some very pertinent remarks in *Gleanings*, and following them are some more remarks of a similar character by the editor. Below will be found these remarks:

"I noticed a communication by Mr. Arthur T. Goldsborough, on page 842, 1891, in which he asserts that the bees of Italy are not three-banded. I was in hopes some of the older writers would give us a chapter on the color of the Italian bee; but so far I have not seen such a communication. It seems strange that this writer, being as close an observer as he claims to be, should assert that no bee would show more than one yellow band. Now, the fact is, among all classes of bees, all mixtures and crosses, I have never been able to find a single bee with *only* one yellow band. Wherever I find a bee with yellow on any bands, there is yellow on the three: and, again, if the bees of Italy are not three-banded, how comes it that, of all the bees that are yearly imported from there, no importer has received a single bee that does not show the three yellow bands? Any importer will guarantee this. Another thing, all the queens that are brought from Italy are not tested queens. Especially last spring, the breeders of Italy could not fill all their early orders with tested queens, and get them here as soon as the importers wanted them: and yet the bees of Italy, so far as I have seen them (and I have received queens from several breeders in various parts of Italy), are three-banded. The bands are not bright yellow, but more inclined to red: and I believe *the darker colored these bands are, the better workers the bees prove to be*.

I notice, both by the circulars of breeders and by several letters which I have, that the first thing the average American tries to do is to improve the Italian bee. This is a characteristic of the American, and "improvement" is his motto: but how is a person to undertake to improve a thing that already has fixed characteristics? I find that this "improvement" (?) consists in making it yellow, *yellower*, *yellowest*.

While I have no objection whatever to these yellow bees, and have and intend to continue to keep the yellowest bees procurable, yet I will say for them that they will not reproduce themselves. Out of ten queens from a five-banded mother, mated in an apiary where drones from five-banded mothers abound, not more than two of the untested queens will prove to be five-banded. I find the five-banded bees as gentle as the imported stock: but the bees from queens of five-banded stock that produce bees with only three bands are *not gentle*.

Last season there were many of these queens sold. Last fall at the fairs I found many disappointed purchasers of them. They had bought untested queens of them, expecting to get some five-banded. They had failed, and consequently they were disappointed.

The Americans have bred the Shorthorn until he is a fac-simile of the Devon. They have bred the Poland-China until a whole field full of experts cannot tell a Poland-China from a Berkshire, ears alone excepted. And they have bred the Italian bee until it is identical with the Cyprian. Now, this has not all been done by "judicious selection."

When there is a demand for any type of animal or bee, the Americans are going to supply that demand, and do it right speedily.

Why is it, Mr. Editor, knowing as you do the nature of the imported bees to produce workers almost identically the same, you charge about double for a queen from an imported mother, that herself happens to be a little yellower than ordinary?

W. C. FRAZIER.

ATLANTIC, Ia., Dec. 16.

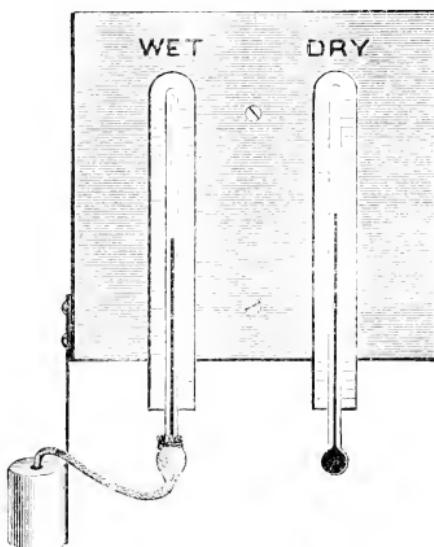
Our experience as importers is quite in line with yours. Next to the Italian bee keepers themselves, the importers who receive annually large consignments of queens from that country ought to be in a position to judge of the general characteristics of the bees. It is our opinion that imported Italians are as fixed as any race of bees known, in their general characteristics, with the possible exception of the black, or German race. Of the hundreds of queens we have imported from Italy, we never saw any four or five banded progeny from any of them; neither have we seen any one-banded progeny. They have been uniformly three-banded bees, though in the progeny of a few the third band was quite indistinct, and some would pronounce them only two-banded. It is remarkable that the bees of Italy should show so generally such fixed qualities, and that these qualities should duplicate themselves so nearly in the first generation. It is a fact, as we have often repeated, the bands of the imported are leather-colored, or, at least, a dark yellow; and these darker bees have so far given better results in honey. We therefore take the liberty of putting in italics what you say on this point.

It is true, that Americans will endeavor to give people what they want: and because there is a demand for yellow queens, and because of the fact that only a few of them are among the daughters of imported mothers, we have had to charge more for them: but as we say in our price list, their bees will have no more than three yellow bands, nor will they be any better honey-gatherers than those from darker daughters. In regard to the article of Mr. Goldsborough, you will see, by turning to page 318, Dec. 15, that he must have visited only a few localities in Italy, or else he observed very carelessly. Although not intending to misrepresent, his article gave a very incorrect idea of the kind of bees found in Italy."

From the way in which bees brought from Italy have, by selection, been made to show four and even five bands of yellow, it seems to me that the Italians are not so fixed a race but what they may be changed, at least so far as color is concerned.—ED. REVIEW.

The Hygrometer, or the Wet and Dry Bulb Thermometers.

Since the last REVIEW was printed, I have arranged a wet and dry bulb thermometer. I took two ordinary dairy thermometers that registered exactly alike, attached them to a piece of board ten inches long by four wide, with a little shelf at the bottom upon which to set a bottle of water. With a strip of cheese cloth I made a little cloth tube that would just slip over the bulb, tying the cloth above and below the bulb, so that it would fit snugly. The lower end of the strip of cloth rested in the bottle of water below, as a wick rests in the oil in a lamp.



WET AND DRY BULB THERMOMETERS.

In the sitting room, eight feet from the coal stove, the wet bulb registered 54°, the dry, 68°. In the cellar the wet bulb stands at 40° most of the time: the dry at 42°. We have had some two or three cold "snaps" since the hygrometer was arranged in the cellar, and when I saw that there was danger of the temperature going too low, I carried an oil stove into the cellar, and in that way furnished artificial heat enough to keep the temperature at about the same degree, viz., 40°: but I was very much interested in seeing that while the artificial heat did not raise the mercury very much in the dry bulb thermometer, it lowered in the wet bulb instrument. In other words, it dried the air as well as warmed it.

After the cold weather we had a thaw, accompanied by rain, showing that the outside air was saturated. The air in the cellar was somewhat affected by it. The dry bulb showed about 43°, while the wet came up to about 42 $\frac{1}{2}$. I then carried a half bushel of unslacked lime into the cellar. In two days there was a difference of three degrees in the readings of the two instruments, a greater difference than had been seen at any time except when artificial heat had been used.

Mr. Larrabee writes me that the difference in the readings of his thermometers in the bee cellar at the college is usually between 1 and 1 $\frac{1}{2}$ degrees. When there is no fire in the outer cellar for several days, the mercury stands *alike* in both instruments, showing complete saturation of the air. It is evident that the cellar is a damp one. If I remember aright, it is water limed.

I notice in the last issue of *Gleanings* that Mr. Hoffman prefers a damp cellar. Now this is something that it may be worth while to know about. A man says that his cellar is of such a temperature. We ask him, is it a dry cellar? He may say: "Oh, yes, it is dry." How does he know? In fact, *does* he know? And if he knows, does he know *how* dry it is? When we can have reports of bees wintering well with such and such temperatures, with such and such percentages of saturation, then we shall begin to get something *definite*. A hygrometer is such a simple thing to make and use that I wish every one of my readers would make one, take daily observations and send me their reports. I would be willing to tabulate them: and then let them report next spring how the bees have wintered. Let us try and learn at what degree of temperature and what degree of saturation we may expect the best results.

But a bee cellar is not the only place in which a hygrometer may be used to advantage. It can be used to foretell either frost or rain. Now that this subject is up, perhaps I cannot do better than to give two short extracts from a pamphlet called "The Weather," published by Robert Clarke & Co., Cincinnati, Ohio. The price is only twenty-five cents, and to those interested in this subject, it is well worth the money.

THE DEW POINT.

"The air deposits a portion of its vapor on all bodies that are colder than itself, and the temperature at which such deposit of moisture is made is called the *Dew Point*. The *Dew Point* may at all times be found by calculation with a set of factors.

The rule is: *Multiply the factor opposite the reading of the dry bulb into the difference of the dry and wet bulb thermometers, the reading of the dry bulb thermometer, less the product found, will be the Dew Point.*

TABLE OF FACTORS FOR COMPUTING THE DEW POINT.

Dry Bulb.	Factor.	Dry Bulb.	Factor.	Dry Bulb.	Factor.
20	8.1	29	4.6	38	2.4
21	7.9	30	4.2	39 to 41	2.3
22	7.6	31	3.7	42 to 45	2.2
23	7.3	32	3.3	46 to 50	2.1
24	6.9	33	3.0	51 to 56	2.0
25	6.5	34	2.8	57 to 64	1.9
26	6.1	35	2.6	65 to 73	1.8
27	5.6	36	2.5	74 to 86	1.7
28	5.1	37	2.4	87 to 90	1.6

EXAMPLE.

Suppose the dry bulb reads 65°
Wet bulb 59

The difference.	6
Factor (from the table, 65°)	1.8
Product	10.8
Dry bulb reading	65°
Less product	10.8
DEW POINT	54.2

Suppose the dry bulb reads 60.5°, and the wet bulb 60°. This would show that the air was very highly saturated, and, by reference to the Relative Humidity Table, it would be found that the percentage of humidity was 97. Rain could be expected, because the air contained nearly as much moisture as it was capable of sustaining. Computing the dew point, or temperature required to condense the vapor, in this case we find it to be 59.5°. That is to say, the temperature of the air in this case has to sink less than one degree, in order to produce rain.

As a guide to the probability of rain, the application of this method becomes interesting, and is generally found reliable.

If the mercury in both bulbs rises as the day advances, rain is likely, since the temperature of the air will naturally fall with the decline of the sun. In sultry weather clouds and other 'signs' of rain may mislead us, but if we look at the evening sky and see there the fair weather red, as well as consult our hygrometer, and find there a considerable difference in the readings, we need not apprehend rain on the morrow. A rapid increase in the difference between the two thermometers in the morning foretells a fair day. An increasing difference between the temperature of the air and the temperature of the dew point, accompanied by a fall of the latter, is a certain sign of fair weather. But diminishing heat and rising dew point foreshow rain."

FORETELLING FROST.

Frosts should not take the farmer or the horticulturist by surprise. The probability of their occurrence can be known with almost as much certainty as the arrival of an express train. For practical use, one of the most important meteorological instruments is the *hygrometer*, by means of which can be ascertained at any time the *dew point*, and the approach of low temperature, or of frost, thus foreseen and provided against. If on a fair day, toward evening, the dry bulb, which would also be the temperature of the air, indicated 50° and the wet bulb 38°, the dew point at the time would be about 25°, and frost could of course be expected. If, on the other hand, the dry bulb were 50° and the wet bulb 48°, the dew point then would be about 46°, and no frost need be feared under the circumstances. The rule and table of factors for computing the dew point is given above. The temperature of the air need not necessarily sink to 32° to produce frost, since plants and other good radiating bodies may become cooled by radiation considerably below the temperature of the surrounding air, and a heavy frost may occur when a thermometer at some elevation above the surface indicates only 36° to 40°. A light frost may occur when the same thermometer indicates as high as 45°, or even 50°, of temperature. The formation of frost depends upon the dew point. Dew and frost, like rain and snow, are formed under the same circumstances, excepting the difference in temperature."

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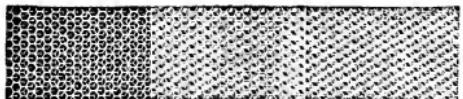
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Please mention the Review.

SOLID GOLD

Around the queen centers our future success in apiculture. A poor queen, like a poor horse, will die on our hands when most needed. Color, in either case, is immaterial, being simply a matter of choice—my choice is the G. M. Doolittle strain of Italians, which is not only the prettiest, but is also far in advance of all other strains, imported Italians not excepted.

I am the owner of the best queens ever produced by Mr. Doolittle, and shall govern myself according to Nature's best way of rearing queens.

Listen to what Mr. Doolittle says: "During the past sixteen years, these bees have been bred with great pains regarding their honey gathering qualities; my average production of comb honey from each colony for that time having been about 80 lbs. each year, while single colonies have given us as high as 298 to 300 pounds."

My capacity is about 300 nuclei, while my rates are as follows: Virgin queen, 40cts.; untested, \$1.00; tested, \$2.00; select tested, \$3.00; select, tested, breeding queen, \$4.00.

Special Offer. A select, tested, breeding queen will be given the one ordering the greatest number of queens during the month of Mar., Apr., May or June. Orders may be booked now, and the pay sent when the queens are ready.

W. W. MOREHOUSE, LAFAYETTE, IND.

HERE I



Would you like bees like me? If so, now is your time to send for me. You can also confer a favor on **JACOB T. TIMPE**, of Grand Ledge, Mich., by sending your order a once. All who do this will receive a present.

Queens warranted to produce at least 3 banded bees, send out before June, \$1.25 each or six for \$6.00. Queens warranted to produce 4-banded bees, or more, sent out before June, \$2.00 each, or six for \$10.00. Tested queens, producing at least 3-banded bees, sent out before May, \$2.00. Select tested, before May 1st, \$3.00. Breeding queens, the very best, before June, \$5.00. Virgin queens, in the season, 50 c's, each; five for \$2.00; twelve for \$4.00. Safe arrival, safe introduction and satisfaction guaranteed. Prices will drop after June 1st. See ads. in Dec. and Jan. REVIEWS.

12-91-51 *Please mention the Review.*

Bees, Hives, Sections, Smokers, Foundation, Extractors, Shipping Cases, Ets., are sold by J. C. SAYLES, Hartford, Wis.

Send for Price List. 292 ff

Please mention the Review.

KEYSTONE APIARY.

Queens in June; in July,		
Select,	\$3.50	\$3.00
Tested,	2.50	2.00
Female,	1.50	1.00
6 "	8.00	5.00

Send for Circular.

W. J. ROW,
Greensburg, Pa.

12-91-51 *Mention the Review.*

Cheap Freight and Quick Transportation.

Being located at the most central point of railroad and express companies enables us to furnish bee-keepers with supplies at less cost to themselves than any house in the country. We furnish everything needed in the apiary, as low as the lowest and as good as the best.

COOK'S COMPLETE HIVE combines all the most approved methods of hive making. It is a complete arrangement for out door wintering and is equally well adapted to producing comb or extracted honey. Send for illustrated circular and price list.

J. H. M. COOK, SUCCESSOR TO
KING & ASPINWALL 78 Barclay St., New York City.

BEGINNERS IN BEEKEEPING

Will find our **OUR NEW, LARGE, ILLUSTRATED CATALOGUE** and **PRICE LIST** for 1892 the **Most Complete** and easiest to understand: the prices, too, are **VERY LOW**. We make all styles of **HIVE**, **SECTIONS**, **FRAMES**, **ETC.**, with the greatest accuracy. Our goods are guaranteed to be the very best. If you need any supplies, write to us.

THE W. T. FALCONER Mfg. Co., Jamestown, N. Y.

Also publishers of **THE AMERICAN BEE-KEEPER**, a 24-page monthly for beginners, 50 cts. a year. Sample copy free.

Please mention the Review.

2-92-3

DON'T SEND

Across several States after Goods that can be bought just as cheaply near home, but write to

GREGORY BRO'S & SON.

Ottumwa, Iowa, for their large, 12-page, illustrated catalogue of everything needed in the apiculture—Hives, Sections, Shipping Cases, Smokers, Foundation, Bees, Queens, Bee Veils, etc., etc., etc.

Please mention the Review.

Italian and Albino Queens.

Headquarters for the Albino bee. If you desire pleasure in working among bees, and wish for large yields of honey, then buy those beautiful Albino queens from my one hundred dollar queen. Untested Albino queens from same queen in season. Also tested and untested Italian queens in season. For circulars address

2-92-31 D. A. PIKE, Smithburg, Md.

EARLY CARNIOLAN QUEENS.

From May 20th to June 20th, \$1.50 each. After the 1st of June there will be two breeding yards, one for Carniolans and one for Italians, and queens of either variety will be sold as follows: Untested queens, 50 cts. each; three for \$2.00; six for \$3.50. After June 20th, tested queens of either variety, \$1.00 each. For further particulars send for circular. 1-92-4

JNO. ANDREWS, Patten's Mills, N. Y.

Early Queens.

From our branch apiary in Texas, which is three miles from any other bees, and none but the **Best, FIVE-BANDED, Golden Italian Queens** used to rear queens and drones. Our bees are the gentlest, best workers and most beautiful bees known. Safe arrival and entire satisfaction guaranteed. One warranted queen in Mar., Apr., or May, \$1.25; 6 for \$6.00. If you want the **best**, see for our Circular at once. 1-92-61

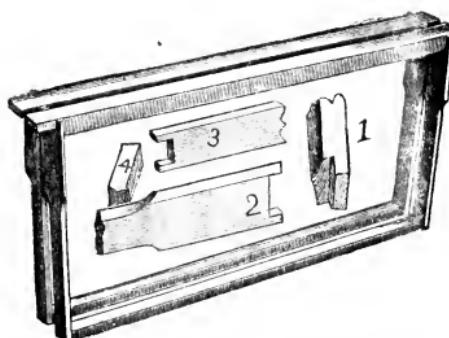
S. F. & I. TREGO Swedona, Ill.

THE LARGEST FACTORY IN MICH.

Devoted exclusively to the manufacture of aparian supplies

Fixed frames are the "rage," the Hoffman taking the lead. I make them with the molded comb guide as shown in the cut. The top bars are 1-1/16 wide, and 1/8 thick. The end bars are widened at the top. The bottom bars are 1/8 square so that the bees will build their comb down to it. As the best is the cheapest, get the best. Price per 100, \$1.50; per 1000, \$15.00.

Nice, white **SECTIONS**, \$3.50 per 1000; cream sections, \$3.00 per 1000; No. 2, \$2.00 per 1000. **MENTION THE REVIEW.**



The cheapest all-purpose hive is the same size as the 8-frame Dovetailed, and takes the same inside furniture. One hive, 8 Holl. frames, super, section holder, sections, starters, follower and wedge, all complete except paint, \$1.25. Painted, \$1.40. Five hives, in the flat, same as above, except no starters, but with a plain division board, \$1.00 each. Without sections, 95 cts. each.

A twenty-page price list sent free.

J. M. KINZIE, Rochester, Oakland Co., Mich.

MAR. 10, 1892.

THE BEE-KEEPERS'
REVIEW
Published Monthly.

At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line. Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:—

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

CLUBBING LIST.

I will send the REVIEW with—		
Gleanings.....	(\$1.00)	\$1.75.
American Bee Journal	1.60)	1.75.
Canadian Bee Journal .....	.75)	1.65.
American Bee Keeper .....	.50)	1.40.
Missouri Bee Keeper .....	.50)	1.40.
Bee Keepers' Guide .....	.50)	1.40.
Apiculturist .....	.75)	1.65.
Bee-Keepers' Magazine .....	.50)	1.00.

For Simplicity and Durability
Bingham Patent Smokers,
 AND
BINGHAM & HETHERINGTON
Honey Knives,
 ARE WITHOUT QUESTION

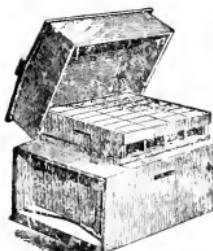
THE BEST ON EARTH!

Doctor Smoker,	3½ inch,	\$2.00
Conqueror Smoker,	3 "	1.75
Large Smoker,	2½ "	1.50
Extra Smoker,	2 "	1.25
Plain Smoker,	2 "	1.00
Little Wonder Smoker, 1½ "	65	1.15
Bingham & Hetherington Knife,	1.15	

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINCHAM & HETHERINGTON,
 Abronia, Michigan

190-tf



Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa.,
One of the Largest Bee-Hive Factories
 in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

Hives, Sections, Crates and Foundation.

All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue.

291-tf

OLIVER HOOVER & CO., RIVERSIDE, PA.

Please mention the Review.

BIG OFFER!

Now is the time to get your supplies cheap. **FREIGHT PREPAID** on all supplies sent anywhere within 100 miles of Jackson; and on large orders it will be paid still farther. Who does this? Soper the hustler. Send for his new price list. Car load of goods just received.

292-tf

W. D. SOPER,
 Box 1473, Jackson, Mich.

THE CANADIAN

Bee Journal, Poultry Journal,

EDITED BY D. A. JONES. ED'TD BY JNO. GRAY.

75 cts. a Year. 75 cts. a Year.

These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike valuable to expert or novice. Samples free. Both journals one year to one address, \$1.00. Send us \$1.00 and try the two journals for one year. Address BEETON, ONT., Canada.

It's a Mistake

Bee-Keepers make, in not replacing old, worn out queens with young ones early in the spring. This re-queening

PREVENTS SWARMING

and will double the yield of surplus. I breed the "leather back" strain of Italians, and make a specialty of contract orders.

11-92-tf A. F. BROWN,
 Agent No. Express Co., Huntington, Fla.

You'll Find our Strain of Italians

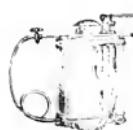
They are HUMMERS if you want bees for honey. Queens bred for BUSINESS and gentleness.

We make foundation as good as the best. We can furnish other supplies at wholesale or retail. Early orders get the best discount. Price list free.

JNO. NEBEL & SON,
 3292-tf High Hill, Mo.



**PRICES
LOW**



SPRAY YOUR FRUIT TREES AND VINES

Wormy Fruit and Leaf Blight of Apples, Pears, Cherries, Grapes and Potato Rot, Plum Curculia prevented by using

EXCELSIOR SPRAYING OUTFITS.

PERFECT FRUIT ALWAYS SELLS AT GOOD PRICES. Catalogue showing all injurious insects to Fruits mailed free. Large stock of Fruit Trees, Vines, and Berry Plants at Bottom Prices. Address W. H. STAUFFER, Quixey, Ills.

JENNIE ATCHLEY HAS MOVED.

In order to get farther out on the prairie I shall change my post office from Farmerville to Floyd. I am preparing to run my entire apiaries for queen rearing. In order to have the use of my four frame nuclei early in the season I offer fine, tested, Italian queens in March and April at \$1.25 each. A few fine breeding queens at \$2.00 each. I have some of the finest breeders in the United States both of the five and three-banded varieties; kept and reared in separate yards. Untested queens in March, April, and May, either variety \$1.00 each; six for \$5.00; twelve for \$8.00. June and after 75 c's. each; six for \$4.00; twelve for \$7.50. Orders may be booked now and the pay sent when the queens are ready. Special prices to dealers who take a certain number of queens per week. My new order office will be Greenville, Texas. Safe arrival guaranteed on all queens. 12-91-7f

JENNIE ATCHLEY, Floyd, Texas.

Please mention the Review.

Bees, Hives, Sections, Smokers, Foundation, Extractors, Shipping Cases, Ets., are sold by J. C. SAYLES, Hartford, Wis. Send for Price List. 2-92-ff

Please mention the Review.



KEYSTONE

APIARY.

Queens in June; in July.		
Select.	\$3.50	\$3.00
Posted.	2.50	2.00
File.	1.50	1.00
6 "	8.00	5.00

and for Circular.

**W. J. ROW,
Greensburg, Pa.**

12-91-7f *Mention the Review.*

SOLID GOLD

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Special Offer. A select, tested, breeding queen will be given the one ordering the greatest number of queens during the month of Mar., Apr., May or June. Orders may be booked now, and the pay sent when the queens are ready.

W. V. MOREHOUSE, LAFAYETTE, IND.

Please mention the Review.

BEES BY THE POUND,

ITALIAN QUEENS. ALSO A SELECT LINE OF

Bee-Keepers' Supplies.

Send for price list to OLIVER FOSTER, Mt. Vernon, Linn Co., Iowa. 3-92-ff

Please mention the Review.

SECTIONS, SECTIONS, SECTIONS,

Foundation, Foundation, Foundation,
SMOKERS, SMOKERS, SMOKERS,

and **ALL** other supplies. Send for catalogue.

J. STAUFFER & SONS, Nappanee, Ind.

12-91-7f

Please mention the Review.

Cheap Freight and Quick Transportation.

Being located at the most central point of railroad and express companies enables us to furnish bee keepers with supplies at less cost to themselves than any house in the country. We furnish everything needed in the apiary, as low as the lowest and as good as the best.

COOK'S COMPLETE HIVE combines all the most approved methods of hive making. It is a complete arrangement for out door wintering and is equally well adapted to producing comb or extracted honey. Send for illustrated circular and price list.

J. H. M. COOK, [SUCCESSION TO KING & ASPINWALL] 78 Barclay St., New York City.

Barnes' Foot and Hand Power Machinery.



This cut represents our Combined Circular and Scroll Saw, which is the best machine made for Bee Keepers' use in the construction of their hives, sections, boxes, etc.

8-91-16t

MACHINES SENT ON TRIAL.

FOR CATALOGUE, PRICES, ETC.,

Address *W. F. & JNO. BARNES CO.*, 384 Ruby St., Rockford, Ills.

Please mention the Review.

BASSWOOD HONEY, Extra Quality.

USUAL LOW PRICES.

Address

JAMES HEDDON,

Dowagiac, Michigan.

Please mention the Review.

Our Catalogue of Bee-Supplies. Send for it. Contains all you Need. Prices to suit the times.

Your Success in Bee-Keeping depends very much on the queens, hence you see that only the best queens are really cheap. We have the best and want you to try them. As for prices—well, you'll find them reasonable

R. STRATTON & SON,

4-91-12t Hazardville, Conn.

Please mention the Review.

DO YOU KEEP BEES

If so, send your name and address for a Free Sample of the **AMERICAN BEE JOURNAL** Weekly—32 pages—One Dollar a year.

THOMAS G. NEWMAN & SON
PUBLISHERS
CHICAGO, ILL.

THE ODELL TYPE WRITER.

\$20 will buy the **ODELL TYPE WRITER** and **CHECK PERFORATOR**, with 78 Characters, and **\$15** for the **SINGLE CASE ODELL**, warranted to do better work than any machine made.

It combines Simplicity with Durability, Speed, Ease of Operation, wears longer without cost of repairs than any other machine. Has no ink ribbon to bother the operator. It is Neat, Substantial, nickel plated, perfect and adapted to all kinds of type writing. Like a printing press, produces sharp, clean, legible manuscripts. Two to ten copies can be made at one writing. Any intelligent person can become a good operator in two days. We offer **\$1,000** to any operator who can equal the work of the Double Case Odell.

Reliable Agents and Salesmen wanted. Special inducements to Dealers.

For Pamphlet giving Indorsements, &c., address

ODELL TYPE WRITER CO.,
358 Dearborn St., Chicago, Ill.

Oranges, Honey,

Apples, Potatoes, Cabbage, etc. wanted. Will buy, or sell on commission. Prompt returns. Best of reference. **EARLE CLICKENGER,** 11-90-11t Columbus, Ohio.

Reference: Editor REVIEW.

I WISH to buy, receive this paper **SEEDS.** I will pay my up-keep, tested.

Order for the following "STAR COLLECTION" for TWO DOLLARS (to pay postage, packing, etc.

WATER MELONS.

10 Varieties comprising ALL the largest, largest sweetest can be sent in a superb collection of the most delicious watermelons in one large package.

MUSK-MELONS.

10 Varieties. A grand assortment of most delicious muskmelons.

VEGETABLE PEACH.

This beautiful vegetable—first introduced by me—is exact color, shape, and size of a ripe orange; fine for mangoes, preserves, excellent fried; and make the most delicious sweet pickles.

GOLDEN HUSK-TOMATO.

This rare tomato is unequalled for pies, preserves, tomato fles, etc.—extraordinarily productive, and will keep in the husks all winter. Many consider them fully equal to the strawberry.

MIXED FLOWER SEEDS.

A superb collection of the most beautiful flowers—all the old favorites, and hundreds of new ones. A large package, **2** Valuable **NOVELTIES** will be sent free to all who order promptly, and when ill, if pleased, show seeds and this offer to a few friends.

The STAR collection is "cheap at \$1.00" but, (to introduce) will be sent postpaid—with my Illustrated Catalog, for only 20 cents if ordered at once. Don't delay.

Name this paper, and address.

A. T. COOK, HYDE PARK, N. Y.

80
K

ADVANCED BEE-CULTURE;

Its Methods and Management.

This book is now "out" and ready for delivery. It contains 88 pages the same size as those of the REVIEW. It is bound with enameled paper tinted to resemble perforated zinc.

It begins with The Care of Bees in Winter, and then tells how they ought to be cared for in the spring in order to secure the workers in time for the harvest. Then Hives and their Characteristics, Honey Boards, Sections, Supers and Separators are discussed. The best methods of Arranging Hives and Buildings and Shading the Bees are described. Varieties of Bees, Introducing Queens and Planting for Honey are next given a chapter each. Then the Hiving of Bees, Increase, its Management and Control, and Con-

traction of the Brood Nest are duly considered; after which Comb Foundation, Foul Brood, Queen Rearing, the Raising of Good Extracted Honey, and "Feeding Back" are taken up. After the honey is raised, then its Preparation for the Market, and Marketing are discussed. Then Migratory Bee-keeping, Out-Apiaries and Apriarian Exhibits at Fairs are each given a chapter. After this comes the question of Wintering, which is discussed in all its phases. The influence of Food, Ventilation, Moisture, Temperature, Protection, etc., etc. are all touched upon. There are also chapters upon Specialty versus Mixed Bee-Keeping, Comforts and Conveniences in the Apiary, Mistakes in Bee-Keeping, etc., etc.—32 chapters in all.

PRICE of the Book \$50 ets. The REVIEW and the book for \$1.25.

Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

S. T. FISH & CO.,
189 S. WATER ST., CHICAGO,

Handled more comb and extracted honey last year than any firm in United States. They have made arrangements with bee associations to secure their crop. Correspondence solicited.

2-92-tf Please mention the Review.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 308 pages, price \$1.00. Mailed, postpaid, on receipt of price. Contains a care-ful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address ROWELL'S ADVERTISING BUREAU, 10 Spruce St., N. Y.

Has Pleased Others, Will Please You
UTILITY

Bee Hives, Feeders, Smokers and Foundation Fastener. Also other Apriarian Supplies. Circular and prices on application.

LOWRY JOHNSON,
MASONTOWN, PA.

ITALIAN QUEENS AND SUPPLIES
FOR 1892.

Before you purchase, look to your interest, and send for catalogue and price list.

1-88-tf J. P. H. BROWN,
Augusta, Georgia.

HATCH CHICKENS BY STEAM.
IMPROVED EXCELSIOR Incubator

Will do it. Thousands in Successful Operation.
SIMPLE, PERFECT,
and SELF-REGULATING.
Guaranteed to hatch a larger percentage of fertile eggs, at less cost, than any other Incubator. Send 6c. for Illus. Catalog. GEO. H. STAHL, Pat. & Sole Mfr., Quincy, Ill.

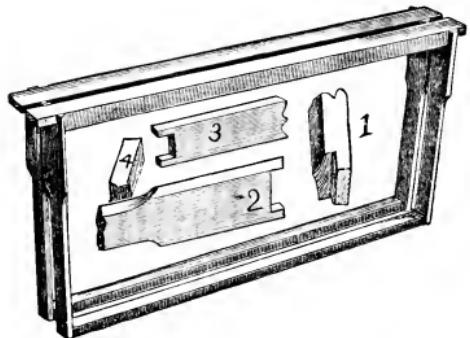
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Send at once for our new
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logue. FREE to
any address
WASHINGON, N. J.

DID YOU KNOW THAT

Fixed Frames are the Rage?

Well, the question with many is, which one to adopt. After offering for sale several styles, our customers have almost uniformly elected in their orders the justly popular

HOFFMAN FRAME.



For the Langstroth, or any Hive of that size, such as the Dovetailed, they are unquestionably the best. They are not so necked up with bar combs, are self-spacing, the most rapidly handled, and always ready for rough handling, such as for snapping and moving to out yards. The top bar has a notched comb guide as shown; it is 1 1/32 in. wide and 5/8 in. thick. The end bars are notched at the top, and on one side are brought to a blunt knife edge. The bottom bar is 1/2 in. square, so the bees will build their combs down on it. Queens can't hide between it and the comb, and it does not catch and roll over the bees in drawing the frame out of the hive. This frame costs a little more than the old style thin top bar frames, but, Oh, my, how much better! As a good frame will last a life time, get a good one. Price \$1.70 per 100; \$15.00 per 1,000.

OUR DOVETAILED HIVE,

In fact, all our Hives complete, now have the New Hoffman Frame with the other inside furniture. Although the new frame is more expensive, we put no more hardware combination in the **SAME PRICE**. Speaking of the DOVETAILED HIVE, remember we were the originators of this Hive, and are the only ones who put any substantial improvement on it. It is now on selling all our other hives put together. If you want the latest as well as those made up on some new and expensive automatic machinery on which the dovetailing is a **CLEAN CUT**, buy of us or our dealers. Send for our 32 Page Catalogue of Bee Supplies which will give full particulars. The information in it will be worth much to you.

Please mention the Review

1892.

Don't you want large, beautiful Queens, producing Bees, but will just please you fully? Well, my Italians are in the lead—so my customers say. 1,018 queens sold and have heard of, only two misnamed. Orders booked now and will be filled in rotation 10 per cent off on all cash orders received during January. Warranted Queen \$1.00; 6 for \$4.50. A select Breeding Queen, yellow to the tip, \$2.00. Will begin shipping May 1st.

W. H. LAWS, Lavaca, Ark.

Bee Hives, Sections, Etc.

We make the best goods and sell them cheap. Our sections are far the best in the market. Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

G. B. LEWIS CO.,

11-91-1f

Watertown, Wisconsin.

Do You Want

Good, gentle and prolific bees? Then get an Albino or white-banded Italian queen of A. L. KILDOW, Sheffield, Ill. Catalog free.

3-92-1f

A. I. ROOT, Medina, Ohio.

Queens AND Drones,

Root's Dovetailed Hive,

Smokers, etc. Send for circular. Italian queens at \$1 Mar. 1. Fines: breeders, \$4.00; tested, \$2.00; 3 for \$5.00; mated in April, \$1.00; 6 for \$5.00, or \$9.00 per doz. Safe arrival guaranteed. Make money orders payable at Clifton.

2-92-3

COLWICK & COLWICK, Norse, Texas.

Beauty,



Gentleness,



Business.

Send for circular and learn what others say about the five-banded Italian Bees. Queens \$1.00 six for \$5.00. Queens ready to mail June 1st.

12-91-1f

J. F. MICHAEL,
German, Darke Co., Ohio

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V. FLINT, MICHIGAN, MAR. 10, 1892. NO. 3.

The special topic of this issue is

The Grading of Honey.

That of the next issue will be

The Shipping of Bees.

Dealers Object to a Fancy Grade.—Many Consumers are Not Particular.—Quality and Weight.—Selling by Sample.

J. E. CRANE.*



THE subject of grading honey is a very important one, and I was pleased when I learned that the Northwestern convention had taken the subject in hand as also did the convention at Albany. It is not at all surprising that there

was no agreement. It has too many sides to it with too many men of many minds interested in it. It is not my intention at this time to give any set of rules for grading, but only to throw a little side light on this subject.

Of all the intricate problems connected with bee keeping I believe no one has puzzled or perplexed me more than that of

grading or selling honey. Year after year I have longed to put those perfectly filled and finished sections of snowy whiteness by themselves as my highest grade; those a little travel-stained or slightly colored or a little imperfect, in the next grade; those containing some dark honey or badly stained or quite imperfect, next; and light, unfinished sections, in still another. I have talked the matter over with wholesale dealers and almost without exception they have advised me to put my pet first grade with my second as there would be more money in it for me and less trouble in selling for them. (It will be remembered that upon the committee appointed by the North American convention on the grading of honey, four were honey dealers, some of them representing some of the largest houses in the United States. I wonder if there were any dealers on the committee at Chicago? If not, this may in part account for the marked difference in the rules adopted.)

[It contained dealers; and dealers took part in the prolonged discussions preceding the adoption of the rules.—ED.]

Now, this putting those absolutely perfect sections with those a little imperfect has troubled me, and I have from year to year asked those who handle my honey if my grading was satisfactory, and I do not now remember of any one except myself who was not satisfied.

I remember some years ago tramping the streets of Boston for the sole purpose of looking up the retailers of my honey to learn

* See biographical sketch at the end of article.

if they were satisfied with my grading. In one grocery store where I found my honey on sale I noticed some combs in an open case that had been injured by careless handling. I inquired of the proprietor how he managed to dispose of such damaged combs. "Oh," he replied, "some of my customers are particular and some are not," and he gave me to understand that those who were not, got the damaged boxes, and were as well pleased with them as the other class were with the perfect combs. "I looked on and received instruction," and have many times since wondered if honey producers were not far more fastidious in their choice of honey than the average consumer.

There is another side of the question. The *whitest* combs do not always contain the choicest honey. For my own eating I much prefer a comb that has remained a month or more on the hive with a strong colony in it to a comb taken from the hive as soon as sealed, however white it may be. In a neighboring town, a honey is produced at the close of the basswood season from which the bees construct the whitest of combs, but the flavor of the honey is *execrable*. Who shall say that these whitest combs alone are "fancy" and all other inferior? Is there not a little danger of our following too closely the "color line?" Should not the palate have supremacy in these matters?

And this reminds me that it is quite as important that honey be *classified* as graded. Would it not simplify matters to place all honey in three classes, say "white," "amber" and "dark," or "buckwheat?" Then each class can be subdivided into three grades if you please. This will give ample room for all honies produced in this country except *Aphis* honey, which should not be offered for human consumption, except perhaps a very small per cent mixed with other honey.

I see no good reason why the producer of a first class grade of buckwheat or goldenrod honey has not just as good a right to label his honey "Fancy B." or "Fancy G." as the clover honey producer has to label his honey "Fancy C." Let each grade be described by a descriptive adjective rather than a comparative one. No. 2 or No. 3 will be sure to prove unsatisfactory.

But I wished to speak of another thing. The weight of sections was not mentioned in connection with the rules laid down by the Northwestern convention, nor at Albany,

and perhaps wisely; and yet, the weight is of quite as much importance in grading honey as some other things it seems to me. Although the weight may not be a quality of a given grade of honey, yet it is a most important factor in its sale. Let me illustrate. Of the first five hundred cases of honey I put up last summer I suppose 480 cases were marked "20 boxes 20 (lbs.) net," or "25 boxes 25 (lbs.) net;" each case containing exactly as many pounds of honey as sections. Suppose I had made two grades of the lot, what would have been the result? It is easy to be seen that the highest grade containing the best filled sections would have weighed twenty-one pounds per case of twenty sections, while the other grade would have weighed but nineteen pounds. Now if the honey so graded had been placed upon the New York or Boston markets how would it have been sold? Do you suppose the best grade would have brought a cent a pound more than the other? I doubt it. Why? The greater weight would have balanced the extra appearance of the higher grade. At the same price per pound a case of the best grade would have cost the retail merchant thirty cents more than a case of the lower grade, and as he sells by the box and *not* by weight, he would be very slow to offer more than that. But some one will say my sections are too large. I think not. Two years ago the same size of case of twenty sections that averaged twenty pounds this year, weighed only about eighteen pounds to the case; honey not being so abundant that year.

In all my experience in marketing honey nothing has surprised me so much as the difficulty of getting prices to correspond to the quality of the different grades of honey. I usually make three or four grades of my honey, and have not infrequently received as much into two or three cents per pound for my poorest grade of white honey, composed of light, unfinished sections, as for my best grade. I can only account for it on the theory that the consumers are "not particular."

That was a very pretty theory of J. H. Nellis', at Albany, about grading up instead of down, but I suspect the X's increased on the flour barrels much faster than the quality improved. When it was found that the X quality sold quickly at a better price was not that grade soon crowded with inferior flour? and it required XX to represent the same grade and so on to the end. If "fancy"

represents the finest grade of honey now produced, and sold at two or three cents per pound more than the next grade, is there not danger of its having a good deal of incongenial company very soon, and "selected fancy" would be required to represent the same grade, and a little later "selected fancy snowflake," and so on until the end of our erate is covered with superlative adjectives that would mean little and be a great waste of stencil paint. But this would be grading up.

I believe it is important to have a system of grading, well known from one end of the country to the other, as an ideal that honey producers may approximate, but doubt if it will be possible for producers living in different sections to grade their honey so nearly alike as to be able to sell by grade *alone*. The appearance of comb honey gathered apparently from the same sources, varies greatly in different localities; a few miles will sometimes make a great difference. I believe honey should be graded and sold as are the semi-tropical fruits, by sample, and the marks of the producer. In this way I have seen a cargo of thousands of barrels of Malaga grapes with oranges and lemons sold in an hour's time, although produced by many different persons. A single package is shown to represent each mark, and then the whole of that brand struck off to the highest bidder. I do not mean that honey should be sold by auction, but that each producer's marks should accurately represent from year to year the different grades of honey he produces. These grades should approximate local or national standards so far as practical, and each case in every grade fairly represent every other case in the same grade in both weight and quality if we desire our honey to become more and more a staple article of commerce.

P. S.—I have been much pleased with your REVIEW, and am glad to know that you are prospering in its publication.

MIDDLEBURY, Vt.,

Jan. 20, 1892.

[Since the above was written I have received a letter, from which I extract the following:—ED.]

MIDDLEBURY, Vt., Jan. 25, 1892.

FRIEND HUTCHINSON.—Our Vermont Bee Keepers' Convention which met here yesterday has been a very pleasant gathering although not so many in numbers as sometimes. In conversation with some of our

best bee keepers they thought little if any more in price could be obtained by putting up their choicest combs in a separate grade, but said that such a grade would sometimes sell to a *very particular* customer when the other may not. But mention was made of the opposition of commission men, or rather large honey dealers to making two grades of the choicest, and that a little imperfect. While a very fancy grade might suit some customers it seems to be much more difficult to sell the *next* grade. My crop of comb honey this year was 21,000 lbs. (XX).

Very truly yours,

J. E. CRANE.

Mr. J. E. Crane is now 52 years old. In early life he greatly desired a liberal education, but poor health made it impossible. The open air seemed to furnish the only condition for an existence here. At 25 he began the study of medicine, but lack of strength soon drove him back to the farm. At the age of 26 he bought his first bees, hoping that with the proceeds he might pay for laying the hard work of the farm performed. In a few years the bee keeping had so grown that the farming was only a secondary matter. For the last eight or ten years his stock of bees has been between 500 and 600 colonies and his yearly crop of honey has averaged 17,000 lbs. His success has stimulated others until about 100,000 lbs. of honey are now annually produced in his county, (Addison.) He was one of the first to advocate and practice the protecting of bees in winter by the use of chaff. During the last two or three winters he has spent his leisure in giving temperance lectures, illustrating them with the stereopticon; himself preparing the various diagrams, pictures and illustrations. I wish that each of my readers might secure from bee keeping the prize that Mr. Crane has gained—that of a beautiful home.

The Beauty of Variety.—How Grading Tends to Sameness.—No Set Rules Needed in Selling.

B. TAYLOR.

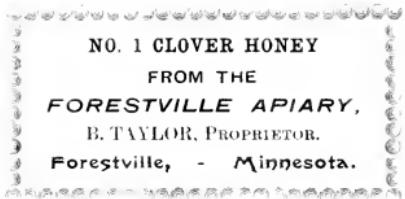


OME things can be measured by fixed rules; can be graded and measured by a standard. We can say that one pound shall be the standard section; that twenty sections shall make a standard erate, but we cannot make a standard for that intangible thing called *quality*, or the artistic arrangement of material things. A city has its beauty, chiefly, because there was no

standard, no cut and dried plan, no official authoritative fiat. Each person was left entirely free to carry out his own idea of making something good and beautiful; to plan and paint his house according to his own will without outside interference. Now every man's work, if he is left free, is but the clothing with material forms of his own mind and inward nature; and, as no two persons are alike, we find a wide range of styles and contrasts in the houses. This seems to be in harmony with one of Nature's first laws, viz., variety. Now beauty and good taste attract; ugliness and bad taste repel; and there is a slow but natural growth upward. The homely is eliminated; the graceful and beautiful are extended. This is Nature's method of growth. Standard and fixed rules interfere with this and are not good. Grading means uniformity, means *sameness*. Is sameness desirable? If so, will grading best secure it? A grade means standard; standard means stopping; stopping means death and decay. A good conclusion to reach is that nothing is so perfect that it cannot be further advanced toward perfection. But is even perfection desirable? Will we be satisfied or benefited by reaching the end of improvement? What will happen when there is no goal ahead? No promised land to strive for? Admitting grading to be desirable, how shall we best secure it? Some bee keepers have fine perceptions of order, are neat and tasty in all their work; their houses are nicely painted, the lawn is smooth and green, trees and flowers adorn it, the bee yard is clean, the hives tastily arranged, and the owner blacks his boots and wears a collar. Other bee keepers will go to breakfast without washing their faces or combing their hair. I have known some of this kind. I have visited a bee keeper whose extracting room was a disgrace to a common cow stable, and I have heard that there were others who actually did not even *paint their bee hives*.

After you have established your grades and each of these classes has tried honestly to come up to the "scratches," will their honey be alike in anything but being *marked* the same grade? No, it will not be, and the only way you can make it so is by making the *hands* and *minds* alike that prepared it. Why not have *printing* graded? How would you, Brother Hutchinson, like to be compelled to have your work on the REVIEW classed with some printing you know of and be compelled to accept average pay?

I prepare my honey by taking all clover and basswood, cleaning the sections in the most careful way, and then never mixing even slightly dark combs with very white ones in the same crate. Each shade of color is kept together and each crate filled entirely with the same shade. A very white crate is all kept together in the same way. The honey in these different crates is equally good in real *eating quality*, and will give entire satisfaction, but will please far better than to mix them in the same crate. Before nailing up my cases the material is run over a surface planer and made very smooth and clean. They are then nailed in a neat manner with small wire finishing nails, and the inside neatly lined with water proof building paper; and when finished a twenty-section crate weighs only two pounds, a ten-section one but one and one-half pounds. The honey is put in, assorted as before described, the tops nailed on, and then a label, which reads:



Is neatly pasted on the front of each crate immediately above the glass.

Now I do not ask the aid of any outside grading to help me to sell my goods. I have sold many tons of it in past years without ever hearing a word of complaint. In 1889 I hired a car, loaded it with my own hands, putting paper around and between each tier of crates, accompanied it to a Western city, and, sample crate in hand, sought a buyer. The first one met asked:

"How much of your honey is like this sample?"

"All of it, sir."

The price was at once agreed upon, the honey delivered, the money paid.

Without loss or delay the same year 8,000 pounds were sent to New York and a good price quickly returned, with the pleasing news, "As fine a lot as we ever handled. Plenty of room for such goods at *top prices*."

Nature offers a banquet free to all, but she seems to give a premium to the quick wit

and nimble feet that "get there first." Not that the winner is to take more of the feast than enough to satisfy the proper needs of his physical nature; but he gets the warm, mealy potatoes, while dull minds and slow, heavy feet, have to put up with the cold ones.

"We are to teach that every man shall take the consequence of his own nature, and that he shall neither saddle upon others the evils of his own nature and actions, nor be defrauded by other people of the benefit of his own worthy nature and actions." Grades and standards violate nature by producing sameness. Nature revels in *variety*. Each grain of sand, each blade of grass, each atom of the universe seems to have a personal identity. I love *liberty*, love *freedom*, and want every person to be left unhindered to work out his own idea of beauty and order according to his own nature and capacity without interference from other people. Fixed rules are sources from which spring the Czars in social and political affairs, and Popes in religion. Official grades are favorable to traders and dealers and injurious to producers. Before we had grades, Minnesota produced No. 1 wheat. She raises just as good wheat now, but it is No. 2, No. 3, or rejected, and it is well known that the farmers of the State are cheated out of many millions every year by the grading. But there seems to be no remedy. The trading classes make the laws and own the courts. I do not want this system engrrafted upon the honey trade, but every one left *free* to beat all the other fellows if he can in the perfection of his products, and trust to Nature's laws of the "survival of the fittest" to lead us to the highest perfection to the injury of none for the good of all.

FORESTVILLE, Minn., Jan. 30, 1892.

[Accompanying the above was the following note:—ED.]

FRIEND H.—Do not think strange of this. You will remember I took the same ground at Chicago. It is hard to keep bee literature out of the slough of repetition and sameness, and I think *new* ideas will do good, even if they are not *very good ones*. What a splendid No. is the last REVIEW! Brother H., I do not wish to flatter you, but the REVIEW is going to "get there" *sure*. Splendidly printed and then filled with *live* thoughts from cover to cover.

B. T.

The Albany Rules for Grading Honey Lack Consistency and Conciseness. — The Changes Needed to Make the Chicago Rules Nearer Perfect.

A. B. MASON.



WHILE being laid by with rheumatism and the "grip," I've been reading; and among other things, Mr. Editor, your leader in the Jan. REVIEW, and I've come to the conclusion that I'm "awful" sorry that I wasn't at

the Albany convention to help keep that unjust representative (?) body of bee keepers from making such a blunder as it did in adopting such rules for grading comb honey. It's the worst conglomeration I've seen to-day. If the persons who got up those rules produce comb honey, and were obliged to sell it by them the rest of their "natural born days," it would be punishment enough for such an infliction.

The Albany folks start out by saying: "Honey shall be graded in two grades," and then proceed to make *five* grades, first, second, third, B, and pieces. I was going to say it was "too much of a good thing." They take up the same room in print that the rules of the Northwestern convention do, but for conciseness are "just nowhere" in comparison.

The first Albany grade has two good things in it. The best grade to be known as "fancy" and "composed of well filled sections." To say the honey shall be light colored is certainly a mistake, for I've seen dark honey that was as truly a "fancy" article as any light colored honey I ever saw.

I believe the first Chicago grade is pretty nearly, if not quite, what might be called a fancy grade, and it would be well to so name it; and your suggestion to have the different grades divided into "fancy white," "fancy amber," and "fancy dark," I believe is a good one. Then have those other grades, and what is called second, third and fourth grades in Chicago grading, without the note, will quite fill the bill.

I don't just like J. H. Nellis' idea of grading *up* instead of *down*, although people

may be educated to almost any course or plan. As a rule, we speak of the best of anything as "A 1;" and of an inferior quality in such a way as to indicate that we go down in the scale.

With the Chicago rules so changed as to have a "fancy" grade, and three other grades, and call the colors in each grade "white," "amber" and "dark," it will be just about as well as we can do.

AUBURNDALE, Ohio,

Feb. 5, 1892.

What a Fancy Grade of Honey and Clean Cases May Do for Honey Producers.

GEORGE E. HILTON.*



"agree." I should like to say just a few words.

My principal objections there were in the wording of the first grade. The rules adopted at Albany I like better, in fact if the last paragraph were left off I am not sure but that would be about my idea of a No. 1 grade of honey. I was not in the hall at the

(George E. Hilton is 46 years of age. He was born in the town of Leighton, County of Bedford, England, and came to America with his parents in the fall of 1851. Has resided at Fremont, Mich., since 1876. Commenced bee keeping fourteen years ago. Has owned and managed at one time 250 colonies. Has made a record of seventy-five lbs. of comb honey per colony, spring count, for eight consecutive years. His supply business now occupying much of his time he has reduced his bees to 100 colonies. He has served two years as Pres. of the Mich. State Bee Keepers' Association, and is now serving his third year as Sec. of the same. He organized the Fremont Progressive Bee Keepers' Ass'n, and was its President until he organized the Newaygo Co. Farmers' and Bee Keepers' Ass'n, which absorbed the former. He is now serving his seventh consecutive year as Sec. and Treas. of the latter. He has been appointed by the Board of World's Fair Managers for Michigan a member of the special committee on Apicultural Products. He has invented a chaff hive and a super that bears his name, which is all the royal y he asks. At home he has served two years as Village Councilman; is Treasurer of the Republican League; is a member and Trustee of the First Congregational Church; has been Superintendent of the Sunday-school for upwards of four years, and is now President of the County Sunday-school Association.

time the rules at Chicago were adopted, but, first grade is as follows: "All sections to be well filled: combs straight, of even thickness, and firmly attached to all four sides: both wood and comb to be unsmeared by travel stain or otherwise; all the cells sealed, and the honey of uniform color." Now if I lived in a locality where my "first grade" came from Spanish needle, asters, golden rod or buckwheat, (all good honeys in their place), the above rules would please me first rate; and I want to ask the friends who attended the Chicago convention, also those at the Michigan State Convention, that if a ton of the above honeys were placed on any of our Western markets, and a ton of such honey as I had at these conventions were placed beside it, which would sell first? Or, should I ask two cents per pound more for my first grade than was asked for the first grade amber, which would be sold first? Comb honey is, and always will be, a luxury, and the markets of the world demand a fancy article. Could we establish a grade, and get a reputation on that grade, those of us who are fortunate enough to be in a locality where we can produce a fancy grade, can obtain from eighteen to twenty cents per pound for our product when the amber honeys will go begging at twelve and fourteen cents, the "cost of production" being no more in one case than the other. Now I think the convention at Chicago made a mistake, and did friend Baldridge an injustice, by not adopting the following note: "The color of the honey to be known as light, medium, and dark: the crates to be unsmeared, but if otherwise, the honey in such crates to be classed in the next grade below the one indicated in the instructions." Now then, suppose I have company, and we are walking through my market place and I desire a case of honey for tea. I find a consignment of fancy honey, but the shipper has been careless, or indifferent; he had some cases left over from last year that he has picked up around his local market, he wants to economize, so he uses these first; not having enough, the balance is placed in nice clean cases and has arrived in good order; all being the same price there is no question as to which I will take. But supposing the honey in a nice clean case cost one cent more per pound, do I want to muss my clothes by carrying the dirty case for twelve cents? No, and this pays for a new case, and the producer's reputation is estab-

lished, and he is paid. Virtue should be, and I believe always is, rewarded, and I am not sure but it is a virtue to put up a fancy grade of honey and place it in the hands of the consumer in a "gilt edge" condition. Yes, let us grade up even if we have to copy after the flour barrel, and cover the outside of the sections with XXX, but let this be strictly a fancy grade.

FREMONT, Mich.,

Jan. 27, 1892.

**Patience and Perseverance.—Duties that Bee
Keepers Owe to the Journals in the
way of Correspondence.**

A. K. COOPER.*



IT is easier to work than to wait. The Italians say, "*Il mondo e, di chi ha, pazienza;*" or "the world is his who has patience;" and of all difficult exercises in the science of morals, the application of this principle is perhaps the

most so. There are not many, like Columbus, ready to hold out to the last; nor, like Palissy, steadily bent, through long seasons of misfortune, on the attainment of his end.

There may be many who can see no immediate connection between the above remarks and the subject of writing an article for the papers devoted to apiculture. Only the editor himself knows and feels that it is easier to work by writing to fill his paper with interesting matter than it is to wait until others do a part of the work by sending in their correspondence in order that we may have information from a larger territory.

*Mr. A. K. Cooper is 32 years old. Was born at Chester, one of the oldest walled cities of old England. When he was four years old his parents moved to Liverpool, where he lived until he was 23 years of age, when poor health forced him to give up a very lucrative position and seek the more salubrious clime of America. His health improved. He became an American citizen. In looking about to find some business by which he could earn a living for wife and babies, he met a bee keeper who convinced him that in bee keeping there was an opening for both himself and wife. He soon thought he saw the need of a paper in the Northwest published in the interest of apiculture. The result was the starting of the Bee-Keepers' Magazine. Bro. Cooper has plenty of pluck, is working hard to make a success of the journal, and the REVIEW wishes him abundant success.

He knows, also, that while due respect is given to his writings, the desire is to have change of sentiment. It is well known that two men will write articles, both taking the same subject, the one will be flat and uninteresting, while the other will be full of lively humor; hence the reason that we should strive to have a variety in order to suit all classes. It is a hard task, but the editor who is gifted with an earnest and intelligent patience will hold steadily on to the attainment of his object.

Perseverance is the stern duty of all who would be victors. There are many who misconstrue the meaning of the word patience. It does not imply idleness, but a steady, plodding perseverance under the most adverse circumstances to overcome all obstacles and achieve success.

These thoughts suggested themselves to me, Mr. Editor, while reading your leader. I seemed to be able to see, with the help of personal experience, how, in the short space of four years, the REVIEW stands to-day in the front ranks of apicultural journals.

Patience and perseverance, that "keeping everlastingly at it," has been your watchword, and I am glad that your efforts have been rewarded, for it is not always so.

Patience and perseverance do not belong alone to the seclusion of the editor's study. One of the greatest troubles that an editor has to contend with is the lack of patience shown by those who are qualified to write intelligently. How frequently we hear the remark, "I know all about such and such a thing but I have not got the patience to sit down and write about it; besides, everybody knows as much about that as I do;" the general impression seeming to be that they have nothing at stake. At first sight it seems so, but if everybody thought the same way what would become of our journals? And if there were no journals devoted specially to the interest of the business of bee keeping, where would the bee keepers of this country be to-day? Why, just where they were one hundred years ago. No, friends, you *have* an interest at stake: if you keep bees it is to your interest to sit down and write upon some topic that is of general interest to apiculture. Remember that the papers are to a great extent what the subscribers make them; it is their organ, through it they give and take their information. The editor is the medium by which articles are arranged for publication, there-

fore it is to your interest to support as many of the bee papers as you possibly can in order to get information from different localities. It is useless to offer such excuses as not being able to write intelligently, being a poor penman, and worse still in orthography and grammar. These excuses are treated for what they are worth. It is not necessary for you to write as a professional would do in order to give satisfaction. Make up your mind on what subject you are going to write, then just go ahead, the same as if you were talking, and, if your article is of any importance to the fraternity, send it to the editor. If he should re-write the whole article don't let it annoy you, but just take notice of your faults, and try again. Be determined to persevere and I assure you that instead of finding it a disagreeable task it will become a pleasant recreation.

Don't say that you have not the time, or you will be judged as not having the will. Look at the leader in the Dec. issue of the REVIEW. See how Mr. Hutchinson wrote his articles in *Gleanings*. For myself I would state, I work hard ten hours each day and spend my evenings in getting out the *Magazine*, besides holding positions in societies that take up some time. Remember, success cannot be achieved even in writing for bee journals without *patience and perseverance*.

WINONA, Minn.

Jan. 4, 1892.

No Literary, Apiarian Aristocracy Needed.—

Technical Journals not Expected to Reach the Highest Literary Standard.

ELIJAH A. DAGGITT.

AM GLAD that the editor of the REVIEW is not going to confine himself for information to bee-keepers of the "upper four hundred," as Ward McAllister styles the *elite* of New York society; but has invited *all*, who can give any ideas that will advance our pursuit, to write for the REVIEW; therefore, let no one fail to do so, no matter if the composition does not show the touch of an artist. The editor will attend to that matter. There is no literary aristocracy among bee-keepers and none will be tolerated. There are probably none who would like to establish one, but I am reminded of an editorial article in the *Boston Journal of Chemistry*, of some years ago, in which the writer found fault with Thos. A. Edison, the

distinguished scientist and inventor, for taking the lecture platform.

Technical journals, to which class the REVIEW belongs, are not, as a rule, expected to be of as high a literary standard as the literary magazines. The necessary talent would be too costly and those devoted to bee keeping, especially, would be so limited for information besides, that it is doubtful if one could be maintained. A large part of the most skillful in any pursuit, except the professions, are unable to write suitably for publication. Should this source of information remain undeveloped? Surely not; and I think the editor of the REVIEW wise in trying to utilize that part among bee keepers. What bee keepers want is *information*—all they can get and from every source. I hope every reader of the REVIEW will do all they can to make it more valuable and interesting.

WHITE HOUSE STA., N. J. Feb. 10, 1892.

A Beginner's Experience in Writing for the Bee Journals.—Who Ought to Write, and how they Should Write.

GEO. F. ROBBINS.

AM disappointed. Perhaps you are. "Writing for bee journals" was *my* subject, you know, and from the time it was announced as the topic for January I have been looking forward expectantly to that issue. It has come, and behold! just *two* articles on that subject. Are these all you got? I rather intended to participate in the discussion, but other matters kept crowding that one back until it was too late. Now I wish I could have managed it. All out of time as it is I have a notion to give you a paper, which you may find it convenient to use in the February number.

I well remember the first article I wrote. It was a brief history of my first year as a bee keeper. I wrote because the spirit moved me, because I wanted to write. It was about a year after I took up the pursuit, and it was a new world to me, brim full of novel interest. Hence the essay was intense with enthusiasm, and the editor thanked me for my "vivid" account of my experiences. But a big share of the latter end was lopped off. About nine months afterwards I wrote again. I presume I told all I had to tell, for it came out in *two* installments. Judging

from the fact that it was printed at all, my lengthy paper must have contained something of value. I recall two items of its subject matter—one an account of an awful predicament into which I plunged, the other a great, open-mouthed, wondering, anxious inquiry. If there was in that essay but little information or real thought, there must at least have been some food for thought, which is not a bad thing sometimes.

Encouraged by my successes I sent off a third great long paper. I think it must have been largely a display of enthusiastic ignorance. Certain it is I never saw it again. But I was in it—I was a bee keeper and a writer for a journal. New revelations and new inspirations came to me at every step, and one failure could not stop me. Subsequent efforts shared a better fate, although they sometimes came back to me minus both head and tail. I soon learned not to waste time and paper on exordium and peroration. Why do I tell these experiences? Because of the lessons they teach. I was always full of my subject, and I vented that fulness. What I saw and learned were veritable sources of inspiration to me. Hence my successes. My enthusiasm was not properly tempered with discretion. I rushed into print too freely—or tried to. Hence my failures. If readers are a little tired of some of the old writers, a you say, (and I think they are), here is the remedy: Novices filled with the pursuit, who have not yet got to persistently riding hobbies or treading old ruts, may often prove among the best of teachers. Or some bee keepers of experience who have never gone into print, could, if they only thought so—if they only wanted to—if they only *would* write,—do some good work. I agree with Mr. Clarke that if some of our great lights would write less their light would shine all the brighter.

By the way, however, I deem Mr. Clarke's article impractical, in the main. If his notions were to prevail we would have fewer journals, and the few writers would have the field to themselves—and the journals we would have would not be *so good* either. I appreciate such writers as R. L. Taylor and others who write so elegantly, but I would rather read the contributions of some whose manuscripts I *suspect* are never presentable until doctored by the editor, than *some* who can write and talk so smoothly.

It is no doubt a great task for these soldiers of the rank and file to write articles for pub-

lication. I know it is so with myself. If I did not have to dig ten to fifteen hours per day six days in the week so much of the year, and spent more of my time in literary work, it might be different. Still, availability of talent is not one of my gifts. Whatever merit there may be in my writings is the fruit of hard work.

In a pigeon-hole in my secretary is a pile of old letters, circulars, etc., blank upon one side—my scribbling paper. My thoughts first go down on these. I seldom send off anything intended for publication that has not been re-written entire, and in that case none of them ever go as they were first indited. It often takes hard study to arrange the material in neat and logical order, and make the diction agreeable. Often I have ached to write up some subject, but failed to do so because I could not strike off an article in an hour or two, and to take half a day or more was to neglect my business. Yes, I know something of the obstacles in the way of many who might otherwise write and write well. Dr. Miller can compose easily and freely no doubt, but he is more versatile, and capable of doing more than many others who could do some equally good work, that is all. It would simply take longer, harder work, to write a good article and they would not accomplish so much. Moreover, a slow, plodding, painstaking workman will always do better work than a quick, electric hand, and the hard wrought essay of the man who has to dig them out of the recesses of his mind are of far more value than the rapid utterances of the one who can dash off a paper in an hour—that is, as a rule. And if one's English is not quite correct, why I presume editors are willing to polish up a diamond for the sake of the diamond itself, you know.

The class of men who should write the bulk of apicultural literature are the specialists. The rule will hold good with any pursuit. The man with thoughts and interests divided among a farm, a bank, an apiary and politics, cannot become an expert apiarist,—at least the one who can is a rare genius. And it naturally follows that such an one cannot write the best. The requisite knowledge and enthusiasm are both wanting. There are those of the rank and file who can write better papers on practical bee culture than can Prof. Cook. Dr. Miller's "Year Among the Bees" is a better text-book on apiary work than Cook's Manual. Bee keep-

ers are, I think, as a rule, of more intellectual cast of mind than men of any other industry, and the possibilities of ours, more largely than any other, have been and will be attained through the medium of books and journals: and it is the men who bend the best energies of their minds to its development in that or any other channel that will accomplish the best work.

MECHANICSBURG, III., Jan. 30, 1892.

Comments on a Beginner's Day-Book.

No. 3.

E. E. HASTY.

HE extra supply of warmth which the winter of '79-'80 had in her pocket threatened to run out with the close of the winter months. March was as March usually is, "up and down and crinkly." Yet the current idea that abnormally warm winter mouths must be paid for by abnormally cold spring months, did not prove true. We simply had an ordinary March, followed by a warm April, May and June.

"March 1st, 1880. Mild winter weather. Thermometer 22° 38° 35°. Made waste box for tin scraps. Overhauled 11, 9.7 and 10.3. Took the weak, queenless colony 11-2 out of their chaff hive, and put them on two Gallup combs—one fresh from the house, and one with some brood from 1-1. Put them down cellar."

This is the first appearance of full temperature records—morning, noon and bed-time. They soon got to be the regular thing and I have kept them up ever since. Their value is not great, but then the task of keeping them is trifling. A slate hangs under the thermometer, on which the figures are temporarily taken, to be transferred to the day-book at convenience. I have the satisfaction of thinking that my figures are about right, while Uncle Sam's, at his costly observatory a few miles distant, are often greatly in error: (middle of a big city, and blanketed with warm vapor from thousands of chimneys every cold, still night.)

It is no disgrace to beginners to attempt the impossible. I was pretty nearly attempting the impossible in trying to get some utility out of a little queenless remnant on the opening day of March. I must needs try down cellar for them, as I was already trying a warm room up stairs. They lived through the month and a few days into April. But my reader who is himself a beginner will ask, "What shall a fellow do in

such a case? It isn't pleasant to throw up the sponge and confess that nothing can be done." Well, I'll tell you. You probably on March 1st will have colonies in nearly all sorts of conditions. Pick out a rather weak colony that you *hope* will go through, but which you have some fears about. Into this colony run all your weak remnants as fast as you find them. If the remnant has a queen put her in a cage with a sufficient retinue of her own bees, and march the rest of them into the "house of refuge." In this kind of uniting smoke the colony where they are to be run in enough to break their idea of resistance: then run in your orphans: then, after waiting a few minutes, send in a little more smoke. Thus you can avoid the loss of self-respect, and the violation of one's sense of duty, that would result from tamely letting them die at their own stand. But don't worry a good strong colony by running remnants in. And don't unite two colonies in early spring if you have hopes of both of them.

"March 2nd. Thermometer 29° 50° 44°. Went through eighteen colonies, mostly in fine order. One queenless, and one in poor condition. Saw several moth worms."

Yes, I "went through" them: and my present judgment is that I went through them rather too much, considering the earliness of the season. The wonder is that I didn't make more of them go clear through into the regions beyond.

The finding of moth-worms in March, although of little interest to a veteran, would naturally interest a beginner, and make him think a good many savage thoughts against the little aparian Turk. The best way to fight the Turk is to diligently destroy his breeding grounds. The summer before I bought the apiary the hives where several queenless colonies dwindled out had been left to become wholesale hatcheries of the moth.

"March 5th. Five clovers of No. 9, sown in a pot Sept. 8th, are up this morning. Only a few came up last fall."

Great is enthusiasm! If you don't want to be a cabbage yourself don't require your neighbor to be a cabbage. Let him have his hobbies. In good sooth he probably knows what he's at better than you do. Just been reading of a man whose neighbors spake against him because he went "boooing about" as he walked the fields. He was improvising poetry: and he kept on "boooing about" until he became the poet laureate of England.

Very insignificant this record of five clover seed coming up looks; yet to my enthusiasm at the time, their birth into this world seemed quite worthy of paternal notice and record.

"March 16th. Three inches of snow. Thermometer 29° 37° 27°. Devised the swiveled single comb-holder."

This was a well developed humbug. After a short trial it went to the lumber-room, and has staid there ever since. It's special purpose was for putting the combs on one after the other, while hunting a difficult queen, also to release both hands while cutting out or inserting a queen-cell. It would be a great help, I thought—and it did help me to a great secret, which I will share with the rest of you, without charging a cent extra, and that is that the human hands are the best single comb-holder in most cases. The thing was too movable, too airy, and made the bees too anxious to go some place—march off in caravans by way of the top-bar projections, or spindle down from the bottom bar and transfer themselves to the tin apron below, etc.

"March 29th. Made fuel-box—wooden sides, with tin bottom, and metal legs."

I still use this identical box; but the "patent" feature of it was a humbug. It stood on metal legs two inches high, and had a tin bottom in order that I might bring it in when I came from the apiary, and set it on the back part of the kitchen stove. Thus I thought to always have my fuel dry, and in prime condition. I found to my surprise that a box full of rotten wood set on the stove that way will not dry out worth a cent; and yet it will take fire sometimes. Thus my bright dream went up in very material smoke. Gather your rotten wood ten bushels at a time, and have it already dry in a bin suited to the purpose—that's the way to do it.

"March 22nd. Warm and bright—first spring-like day for some time. Set out the North Carolina lindens. Overhauled eleven colonies of bees, mostly in good order, but some have to be closed up on fewer frames on account of weakness."

These lindens were sent me as August-bloomers by comrade H. A. Davis. The expectation was that they would bloom still later in northern Ohio than in North Carolina. Several of them proved identical with northern basswoods—and bloom a little *earlier*. There is one, however, that is evidently a different variety, and therefore I suspect it of representing the August-bloomers; but so far it refuses to bloom at all. Just a few buds come out year by year, and drop off

without opening. As the country becomes more and more cleared up, more attention is given to planting trees by the roadsides. If we could get the roadsides generally planted with August-blooming lindens it might help quite a little bit.

"March 25th. Thermometer 19° 40° 25°. Devised a method of clustering swarms by taking a comb from the old hive, and holding it up upon a staff."

I think I tried this idea just once, in a very insufficient way, and then dropped it from that day to this. I think I once held up with my hands such a comb, in the midst of those bees I could reach; and finding I could scarce get a bee to light on it at all, I rushed at once to the opposite conclusion that they naturally hated the smell of the old hive they had just fled from, and would light anywhere else in preference. Possibly if I had had wit enough to try a comb from an alien hive, using a good long staff, and presenting it just before natural clustering had begun, the plan might have scored a success. We can point a moral from it as it is. How much of all that pertains to life we decide on half-way evidence!

To change the subject abruptly, some of the figures went astray in my February article. The handle of the smaller hive-shovel was not four inches long, but fourteen: and the width of tinker's treasury was not thirty inches, but thirteen; so 15x13 is the size of the latter instrument, horizontally.

"March 30th. Bright day after a cold night. Saw bees at work on poplar catkins. Saw a bee at lime with loads."

May we never get so old in heart that we can no longer feel a glow of renewed life, and a dash of youthful enthusiasm when at length, after so many delays and feints spring really opens, and the bees come waddling in with their first pollen loads—when the poplars and willows put out their soft and queer inflorescence. It's a good plan for the old and the young, the wise and the simple, to be all at one once in awhile; and what better time is there than when God breaks the seal of a new life-year? And so it has come about in regard to these first queer attempts at flowers. Men of science call them catkins (little cats) and the children call them pussies. And may God acquaint us with his secret—youth renewed, and ever renewed, like the life of an undying tree.

Bee-Keepers' Review.

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W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN, MAR. 10, 1892.

A CELLAR for bees is better without a cement bottom, if we are to judge by the reports in the journals.

A BOOK FOR BEGINNERS, is something often called for. Mr. J. W. Rouse, of Mexico, Mo., has written a book of fifty-two pages, called "The Amateur Bee-Keeper," that is designed to satisfy just this demand. It tells very briefly and clearly just those things that a beginner would like to know. It is well illustrated and well printed by R. B. Leahy, of Higginsville, Mo. The price is twenty-five cents, and it may be ordered of either the author or the publisher.

HIVE COVERS and caps only $\frac{3}{8}$ thick are opposed by the *Guide*, as being but little cheaper than those $\frac{1}{2}$ thick, while they are more easily injured, and not of so much protection to the bees in early spring, when "the frequent cold spells that are so hard on the young brood, that is often extended on account of a warm spell beyond the ability of the bees to protect some frosty nights, and much of it is lost and usually at a time when the colony could least afford it." I am glad to see that, at last, Bro. Hill is beginning to see the advantage of spring protection, aside from that secured by sugar feeding.

WARMING A HOUSE APIARY BY SUB-EARTH VENTILATION.

It has been many times asked how a bee-cellular or house above ground could be warmed. Mr. J. A. Golden, of Reinersville, Ohio, has managed, by the heat of bees, aided by sub-earth ventilation, to keep his house apiary at the desired temperature. His house is 8x10, by six feet high, and accommodates twenty-four colonies. He has a three-inch tiling, sixty feet in length, laid six feet under the ground, and conducted thence up through the floor. There is a small ventilator at the roof. He says that

on a cold day, one would be surprised to see how mild is the air as it passes in from beneath the ground. He keeps a record of the temperature, both outside and inside the building. He has sent me the record for Jan. The average outside temperature was 24; inside it averaged 40°. One day it was as low as 7 below zero outside, yet it was 39 inside.

THE GRADING OF HONEY.

Well, we are making some progress in the discussion of this subject. One point seems to be already settled, and that is, that we cannot grade honey as regards its *quality*—more's the pity. Tastes are so widely different. What is one man's meat is another's poison. The best that can be done in this line, aside from mentioning the source from which the honey was gathered, when this is well known and the prospective customer is acquainted with this variety of honey, is to send a sample of the honey in a small vial, in a block of wood.

We can grade in regard to color. We can have "white," "amber" and "dark." We can also grade in regard to the condition in which the honey has been stored by the bees, the neatness of the sections, etc. The system adopted, the skill and judgment used in management, all things considered, will show in the appearance of the honey, and for this appearance we wish for some set rules for judging, so that one man can quickly and easily describe his product to a distant, would-be purchaser.

After reading all that has been written upon the subject, I still think there should be one grade requiring perfection. However, I may be wrong: in fact, this whole matter of how grading will affect the matter of marketing, is more or less a matter of speculation.

I still believe that the Chicago rules, with one or two slight changes and the calling of the first grade "fancy," the second, "No. 1," etc., is as good as anything that has yet been proposed. I am favorably impressed with the suggestion of Mr. Crane, that we use adjectives instead of numbers, for the different grades, but I have not yet thought of the ones that I would use to designate what I now would call Nos. 1, 2 and 3, respectively. For the grade above these, "fancy" does very well, but what shall we call No. 1, No. 2, and No. 3?

ONE OR TWO have written that they did not exactly understand why the mercury should stand lower in the wet bulb thermometer. The philosophy of the matter is just this: evaporation causes a loss of heat, hence the drier the air the greater the evaporation, the greater the loss of heat, and the lower will go the mercury in the wet bulb thermometer.

HOW SHALL EXTRACTED HONEY BE KEPT?

Fay Kennell, of Rochester, N. Y., raises extracted honey. He allows *most* of it to become good and ripe before extracting, then stores it in 2-gallon crocks and stacks them up, with sticks between them, in a room in the S. E. part of his house, adjoining the kitchen. In some of the jars the honey becomes watery on top and he is obliged to skim off this thin honey and melt up the rest, and he would like to avoid this trouble. What is there faulty in his management? He wishes to know if there is some manner in which he can thoroughly and quickly cure the honey at the time of extracting.

PORTRAITS AND BIOGRAPHIES.

Suppose that when you were in attendance at a bee keepers' convention you should, at night, be given a room all by yourself. A door from this room led into an adjoining room, and, in some manner, you should learn that this adjoining room contained another bee keeper; and you should begin talking with him through the transom over the door. Now how much more pleasant it would be if that door could be opened, and the bee keeper be allowed to enter your room, where you could sit by his side and see his face. Then you would like to know where he lived, how long he had kept bees, how many, how much honey he had raised, what was his hobby, etc., etc. By the use of portraits and short biographical sketches, the REVIEW is going to try and *open that door*—to bring contributors and readers *nearer together*.

A BOUNTY ON HONEY.

Gleanings for Feb. 1st is almost a "special number" on this subject. The subject is well handled, and, to my mind, there is no doubt that the bounty on sugar affects the price of honey, and that, in justice, honey is fully as much entitled to a bounty as is sugar. Whether the giving of a bounty on sugar is a good thing is another, and a much larger and

more complicated question. It leads directly to the tariff question, upon which the greatest minds differ. A bounty on honey would lower its price, yet leave just as much money in the pockets of bee keepers. This would help sales wonderfully. Personally, I think that the giving of a bounty on sugar is a mistake, but it pinches US, and, as J. A. Green says: "We squeal and we *ought* to." Whether a bounty could be secured or not is still another thing. I fear that the government would answer that honey was already protected by a tariff. It was shown most conclusively, in *Gleanings*, that the giving of a bounty would not lessen adulteration, except that it might so cheapen the product that adulteration would be less profitable.

THE SUGAR - HONEY DISCUSSION.

With what appeared in the last REVIEW upon this subject, I supposed the topic would be dropped, but other journals have taken up the matter and said so much that, in justice to the REVIEW, its correspondents and myself, a little more space must be used in putting the matter to rest.

This has been the most trying ordeal through which the REVIEW has had to pass; the worst feature being that nearly every one jumped to the conclusion that the sugar-honey was to be sold as floral honey with the intent to deceive. Some of the other journals even went so far as to accuse it of upholding *fraud* and advising *CRIME*. I am happy to be able to say, however, that these charges have been withdrawn.

Mr. Hasty said, if the poor seasons continue, we *may* be obliged to secure our honey by the feeding of sugar. He then went on to show that in one sense, and not a narrow one either, it would be *honey*: that the secretions of the bees would change the cane sugar to grape sugar, the same as they change the cane sugar of nectar into grape sugar. Mr. Hasty then continued his argument to show that floral honey would fill all the requirements of such honey. It was handsome, wholesome and palatable.

When I read his article for the first time I was shocked. I will admit it. I sat down at once to prepare an argument against such views. To my astonishment, I could not combat them. They were simply unanswerable. I have watched so eagerly to see if some one else could answer them. No one has attempted it. It has simply been one

"holy horror" at the *idea* of such an attempt. We are so largely creatures of education, that when any one brings up something contrary to our established views and methods we are shocked. In the dark ages men and women were tortured and burned at the stake because they were heretics. The very ideas that were then heresy are now *popular*. This may be a strong illustration, but I think it a fair one. The time *may* come (mind, I don't say that it *will*) when sugar-honey will be an article of commerce. I am willing to admit that the world is not yet ready for it, but the time *may* come.

Right in a line with this matter, allow me to call attention to the time when it was proposed to use comb foundation in surplus honey. There was a hue and cry similar to the one now raised, differing only in *degree*. I have been reading some of those old tirades. They were given in glowing colors. "Some people are not clean in their methods of wax rendering. The old combs are allowed to stand until they are inhabited with disgusting worms and fouled with the excrement of the inhabitants. The whole mass is then stewed up together and the wax squeezed out. Who wants to eat the stuff? U-u-g-h-!" That is the kind of opposition that the users of foundation had to encounter. Then there was the talk about its being artificial. It was not the natural work of the bees; it filled the consumer's mouth with wax and would *ruin* the honey market.

MORAL.

The REVIEW rather prides itself upon being filled with *ideas*; and I would much rather it should occasionally suffer from giving birth to an unpopular view than that it should die of *stagnation*. But I have said enough, and will close by quoting a paragraph from a letter recently received from Mr. Hasty. I wish I might give the letter entire, but he says it is for "my private ear," so I must respect his wishes. In closing he says:—

"But all this is not to stir up more argument. Let it subside as soon as it will decently. You may say for me that I have had my say, and am willing to be quiet for the present, without any rejoinder to my critics. I am aware that my course looks to many like scattering sparks around a powder magazine, and toward that view I do not wish to show either resentment or contempt."

I did think that I would let the quotation from Mr. Hasty's letter close this subject, but, since the foregoing was put in type, the

following communication came to hand; and, with the writer's permission to give it publicity, the temptation is too great to be resisted.

BORODINO, N. Y., Feb. 22, 1892.

Here's my ~~letter~~ Mr. Editor. I am glad that you had the backbone and strength to stand straight and square on your feet in the Hasty-sugar-honey matter. This disposition of yours to stand square has much to do with the way in which the REVIEW is so rapidly climbing towards the top of the ladder. If, for this reason, Mr. Smith withholds his \$1.00 for the REVIEW, ten more will step in to fill the gap.

G. M. DOOLITTLE.

TWILIGHT MUSINGS.

This paragraph can claim only remote kinship to bee keeping. It is given simply to show how delightfully I pass one half hour of the day. It is after supper when I am sitting in the big rocking chair before the glowing coal fire in the sitting room. From the distant kitchen comes the subdued clatter of "dishes" and the chatter of voices as Mrs. H. and the "girls" "do up" the evening's work. During the day my mind is "in the harness," so to speak: I drive it hither and thither and compel it to perform this task and that one; now the harness is hung on a peg, and, like a horse that has finished his day's work and been turned out to pasture, so my mind "lies down and rolls and kicks up its heels." As twilight comes on apace and the shadows deepen in the corners, I do just enjoy myself—the mind is allowed to roam at its own sweet will—and oh! the pictures that come trooping through memory's hall—some sad, some glowing with happiness—over some hangs the mistiness of years, while others stand out with a vividness approaching reality; and, although I am not *at work*, yet it seems as though my brightest thoughts come to me at this "witching hour 'twixt dark and daylight." Presently Mrs. H. comes in with the lamp, and takes up some work of "mending" or "making;" the girls come in and gather about the light, studying their lessons, and bright, beautiful realities chase away the visions.

THE SHIPPING OF BEES

The shipping of queens has been almost reduced to a science. I can well remember when the queens that had to be replaced, from their having died in transit, was a great drawback to the queen trade. Now

this loss is practically nothing. Many complain at the low price at which queens are now sold, evidently forgetting that this great source of loss, queens dying in transit, is not now a factor in the business. Queens at 75 cts. now would be equally as profitable as at \$1.00 in the olden times. But the shipping of bees by the pound, or in full colonies, is still in the experimental stage. It is true that bees are so sent with success, but the success is not so uniform as in the case of shipping queens. The season of the year when bees will be shipped is now approaching, and it may not be amiss to devote the April REVIEW to a discussion of this subject. I well remember when I thought that air was all that imprisoned bees needed, aside from food. At this time the premium list of our State fair said that the premiums on bees should be awarded to "purity of race and numerical strength." For this reason I selected the strongest colonies in the yard. I accompanied the exhibit on the freight car. It was evening when I started. After going about sixty miles I noticed a stream of honey running across the floor. I opened the car door to make it cooler, and sprinkled the bees and floor with water, but the combs of one colony broke down and many of the bees perished. All of the colonies suffered severely, some of them losing half of their numbers. When I reached the fair grounds it was a sickening task to open the hives and clean out the great masses of dead, daubed bees. Mr. Bingham was present and told me that the trouble was lack of *room*: that in warm weather there must not only be ventilation above and below the combs but there must also be a *space*. The bees become terribly excited, and generate large quantities of heat, but if they have room in which they can desert the combs and cluster, all goes well. Since learning this fact I have shipped populous colonies, in the middle of June, just as they were on the verge of swarming, and not lost more than a teacupful of bees to the colony. They were shipped in the Doolittle hive which has an apartment at each side of the brood nest for section boxes, and into these side apartments the bees could crowd out and hang themselves up to cool off. I must admit, however, that I have shipped bees only a year or two ago, and lost them by not giving them room in which to cluster. They were sent just before the advent of warm weather, and it was thought that the covering of the top of the hive with wire

cloth would be sufficient, it had been in several years at that season of the year, but the sudden rise in temperature that came on the next day after they were shipped, caused a melting of some of the combs and the consequent destruction of the bees. I have always thought that the loss might have been caused in part by some express agent stacking up the hives in such a manner that the supply of air was cut off. One reason why I thought this is that some of the colonies sent at the same time, some of them upon a longer journey, but in the same direction, went though in good condition. The moral is to so prepare the hives that the agents can not shut off the air by setting something over the hives. Have strips of wood tacked over the top of the hive, at the ends, in such a manner that they will hold up anything placed upon the hive, and not allow it to come in contact with the top of the hive. The colonies that perished in the shipment mentioned were replaced with others, each colony having a four-inch space both above and below the combs, and, although the weather was much hotter, they went though in good order.

It must not be forgotten, however, that these spaces above and below the combs and large surfaces of ventilation are not needed in cold or cool weather. Bees have been moved on a wagon in the spring, when, of course, the colonies would not be so populous, by simply shutting up the hive, giving no more ventilation than what comes through the few cracks and crevices. This matter of ventilation and space is one that calls for exercise of judgement.

Some have said that bees sent in warm weather need water: that if they do not have it, they will consume the unsealed larva. If the combs are quite well-filled with newly gathered honey, not yet sealed, it will largely supply the place of water; otherwise there should be some provision for water. Where the shipper goes with the bees, he can, of course, supply them with water, but when small lots are sent by express, there is probably no better way than to take one or two old, tough combs and fill them with water, substituting them for the same number of combs in the hive. Combs may be filled by laying them on their side and pouring a shower of water upon them from a sprinkler.

The advice has often been given to place sticks between the ends of the frames to keep the combs in place. I think this unneces-

sary. I have simply driven a wire nail in the ends of each frame and always found it sufficient. In the fall or spring, when the combs are well-fastened with propolis, and the bees are to be moved only a short distance on a wagon, I think that even the nails in the ends of the frames may be dispensed with.

In the shipment of bees by the pound, I have had no experience. I once bought a large lot of bees by the pound, of G. W. Gates, of Bartlett, Tenn., and they came in perfect condition. There were about three pounds in a package, and eight packages were fastened together in one crate. Each crate was a sort of "double decker," there being four packages in the upper deck and four in the lower deck with an air space between. There was a post at each corner to which the packages were fastened. These posts also extended below the lower deck, thus forming legs to keep the packages off the floor. There was a strap over the top by which the whole arrangement could be lifted. Each package was about eight or nine inches square, by eighteen inches long, with wire cloth on top and bottom; and the food was a soft candy placed in a sort of trough made against the side of one end of the cage. Perhaps Mr. Gates will give us more particulars in regard to the candy and the preparing of bees for shipment. It has always seemed to me that the shipping of bees by the pound was the way in which to send them. When a bee-keeper loses his bees winters, all he needs is *bees*. He has plenty of hives and combs, and to buy and pay express charges on something already possessed seems like folly. To let the hives and combs lie idle for the want of bees is equally foolish.

The attaching of cautionary labels in regard to "Handling with Care," "Keeping out of Sun," etc., etc., should not be neglected. Now, if I have made any mistakes, or neglected any important points, will the readers of the REVIEW supply the needed corrections?

EXTRACTED.

The Responsibility of Editors.

Some journals keep standing at the head of the editorial department, a notice that reads something like this: "We are not responsible for the views expressed by our correspondents; simply for the wisdom of

having given them publicity." I don't know but the REVIEW may yet be forced to keep a similar notice in its columns, as so many seem to have formed the idea that I must agree with the views of everything that is published, unless I expressly state my views to the contrary. It is not always possible, nor advisable, to foot-note every article with which I may not agree. In the discussion upon "Apicultural Journalism," that took place in the REVIEW of Nov., 1890, Mr. Eugene Secor so clearly expressed my views upon this point that, at this particular time, I feel that it may be well to reproduce them. He said:—

"I maintain editors have no right to mutilate a manuscript. If it doesn't suit them a postal card could inform the writer, or the waste basket is always handy. An editor ought not to allow any person to use his paper to vent a personal spite, nor to wound the feelings of any reader or writer, but if this is not attempted the more of the *person* of the writer appearing the better. His *style* is a part of himself, and to try to reform it by clipping out or changing is often fatal. Right in line with this idea is the omnipresent foot note in some journals. I don't like them. They often betray the editor—that is, they prove he has no conception of the thing he is commenting on. Why not let every man (or woman) have their own way untrammeled by individual criticisms or fulsome praise, and then editorially treat of such subjects as are presented by correspondents, or suggest others?"

Rendering and Melting Wax.—Why Foundation is Milky in Color.

If there is any one thing in bee keeping upon which we need more knowledge, it is that of rendering, melting and handling beeswax: for this reason I clip the following from *Gleanings*:

"There are some who think steam makes foundation milky, and some that heating hot injures wax. Now, steam, if not used right, will make poor foundation, and heating hot will spoil wax; but wax heated in water can not be heated too hot, and steam used rightly increases its value. When melting wax, if steam is used direct, be sure to let all boil together (water and wax) *furyously* for fifteen minutes. Then let it stand five hours, and the wax will be perfectly clear—so clear that you can see the bottom of a dipperful. There is now no water with the wax. If the wax is dipped immediately over into the dipping-can after melting, or if the wax is not heated hot, but only enough to *just* melt it, the wax will be milky, and foundation made from it will look as though full of sand. At our State fair there were 150 lbs. which we clarified for a bee-keeper, and it took the first premium. It certainly would not if it had been sandy. Every one

that has rendered wax is acquainted with the refuse on the bottom of the cakes. Some of it is loose, and is easily scraped off. This is in the same condition that the whole cake would have been if it had been heated only just enough to melt, and given a good stirring. If you ever have a cake of wax in this condition, to remedy it put the cake in some water and heat to the boiling-point and boil hard for fifteen minutes, then set off the stove, disturbing it as little as possible; cover up so as to keep in a melted state as long as you can. Let it stand for twenty-four hours, when you can take off a cake of wax just as good as it ever was. Save all the screenings from the bottom of your cakes, and try this. You will get enough wax from them every year to more than pay for *Gleanings*.

I wonder whether those who say steam injures wax have melted much that way. We rendered about 1,000 lbs. of wax from old combs this last year, and challenge any one to show as nice a lot. It was rendered by steam at a pressure of eighty pounds, blowing directly into the water containing the combs. I don't know of any way to take wax that comes to us, that was rendered in iron utensils, and make it yellow, unless it is one of thoroughly boiling it in acidulated water. The acid combines with the iron, and sinks to the bottom with the water, leaving the wax free from it, which made it dark in color.

One thing I should like to correct. The acid does not carbonize or burn the organic matter, but combines with the iron, etc., that is in the wax, also with the water, making it easier for the water to soak into the impurities. The hotter the water and wax, the more easily the refuse will settle. In rendering old combs, if we would use something in the place of water that would soak up the cocoons so as to make them heavier than wax, the process of getting the wax from the combs would be very simple.

I have used water and acid, half and half by measure, on old combs, and have succeeded in getting *all* the refuse cocoons and everything else to settle; but on heating to get the wax to rise, the refuse would come to the top, caused by the steam from the boiler condensing and mingling with what water was there before, and making the refuse lighter. I now have another idea in my head to try. It is, to *wash* out the wax while all is boiling hot. I believe I have something that will work, and something that every bee keeper can use.

F. A. SALISBURY.

SYRACUSE, N. Y., Jan. 6, 1892.

[So far as our experience goes you are correct, although you are the first one to discover the plan to us. We may add, incidentally, that any foundation, after having been rolled, that is milky, instead of yellow and transparent, may be brought to the latter condition by exposure to the rays of the sun before a window for a few minutes, or by exposure to artificial heat. Any foundation that is used for exhibition purposes can thus be very much improved where otherwise it might pass for a second grade.]

ADVERTISEMENTS

If you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No 10 Spruce St., N. Y.

50, 6-frame, Langstroth hives, in the flat, all complete, \$1.00 each. Wm. IDEN, Etna Green, Ind.

Half Million No. 1 Sections and 350 colonies of bees must be sold. Send for catalogue. E. T. FLANAGAN, Box 783, Belleville, Ill. 12-91-61

SIX MONTHS
for only 15 cents.

White Mountain Apiarist.

This offer seems to have hit the right chord. Everybody wants to see what the APIARIST is like. Try it WHITE MOUNTAIN APIARIST, Groveton, N. H.

White Poplar Sections.

We have New Steam Power, and New Buildings, and are now ready to furnish White Poplar Sections, Clamps, Crates and Wood Sides at short notice. Workmanship, Quality and Price unsurpassed. Send for sample and price list.

PRIME & GOVE,

1-90-tf Bristol, Vermont.

Good Queens Cheap.

300 tested Italian queens, raised last season, for sale at \$1.00 each; \$10 per doz. A few hybrids at 25 cts. They will be sent about June 15th to 25th, or later if desired. Have orders booked now and send money when you want them. My bees have been

Bred for Business

and these are a bargain. Nuclei and full colonies at very low prices. Send 25 cts. for sample, by mail, of the

UTILITY BEE ESCAPE.

Thoroughly tested, practical and cheap. It cleans the bees out and they stay out. Any one can make it. Get a sample and make your own. **J. A. GREEN,** 2-92-tf Dayton, Ill.

Please mention the Review

EVERY FAMILY

Should have the beautiful 30 page Monthly
= ILLUSTRATED HOME JOURNAL =
50 cts. a year. Same tree. Agents wanted.
THOMAS G. NEWMAN & SON,
CHICAGO, ILL

ESTABLISHED

IN 1887.

BEE HIVE FACTORY.

This old, reliable establishment, will be able to furnish goods

As Cheap as the Cheapest.

Send for Circular before ordering elsewhere.
1-92-12t. WM. H. BRIGHT, Mazeppa, Minn.
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MUTH'S

Honey - Extractor,

Square Glass Honey-Jars, Tin Buckets,
Bee-Hives, Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

Apply to CHAS. F. MUTH & SON,
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P. S.—Send 10-cent stamp for "Practical Hints
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Root's D. T. Hive

AT HIS PRICES. Sections 4¹4x4¹4x1¹₂, snow white, per 1,000, \$3.75; cream colored \$3.00
Comb Foundation. Smokers and Apianian Supplies of all kinds. Circular tree. Save freight and order early of GEO. W. COOK, Spring Hill, Johnson County, Kansas. He can also furnish yellow Italian queens, bred for business, and warranted, at \$1.00 each, or six for \$5.00. Ten per cent. off on all orders received before May 1.

Please mention the Review. 12-91-6t

DON'T SEND

Across several States after Goods that can be bought just as cheaply near home, but write to

GREGORY BRO'S & SON,

Ottumwa, Iowa, for their large, 12-page, illustrated catalogue of everything needed in the apiary—Hives, Sections, Shipping Cases, Smokers, Foundation, Bees, Queens, Bee Veils, etc., etc., etc.

Early Golden, UNTESTED QUEENS, \$1.00.

Large, fine, gentle, and bred for business. Ready March 20. Fine, tested, reared last year, \$1.50; select, \$2.00. A few breeders. Italian or golden, \$3.00 to \$5.00. All reared by the Doolittle method. Reference, by permission, F. H. & E. H. Dewey, Westfield, Mass. Money order office, Dayton, 3-92-1f

J. B. CASE, PORT ORANGE, FLA.

Please mention the Review

SECOND HAND SUPPLIES.

I have no desire, whatever, to go into the supply business, but my brother Elmer has sold the old place and bought a newer, larger one in an adjoining county and the bees that he has been managing for me on shares have been brought to Flint. This is a poor honey location and I shall devote the apiary to the rearing of bees and queens. I shall try raising some honey, enough to keep my hand in and for experimental purposes; but I would be glad to sell most of the comb honey fixtures even at about half price.

There are 100 old-style Heddon surplus cases at 20 cts. each; 50 slatted honey boards at 10 cts.; 50 wood-zinc honey boards at 20 cts.; 40 "dummies," for contracting the brood nest, at 3 cts.; 20 Heddon feeders at 40 cts.; 12 square, 60 lb. jacketed, tin cans at 25 cts.; 1 Whitman fountain pump, \$3.00; B. & H. uncapping knife, 75 cts.; steam wax extractor, Root's make, with copper bottom steam generator, \$1.50; Root's solar, wax extractor, \$1.50. All of these articles have been well cared for and are practically as good as new.

I also have 300 new, one-piece sections at \$3.00; 2000 four-piece, white poplar sections at \$4.00; 25 lbs. light, flat bottom foundation Van Dusen at 60 cts.; 75 lbs. brood foundation, Cary's make, ex'ra fine, at 45 cts.; a new, Stanley, automatic honey extractor, two baskets and each basket will take two Heddon frames or one each of the Langstroth, American or the Quinby frames, price \$15.00; Young American lawn mower, \$2.00.

I would sell any of the above for cash, or I would exchange them for extracted honey or for young, laying, Italian queens. I am offering them now because I have learned that the time to advertise is in advance of the demand.

W. Z. HUTCHINSON, Flint, Michigan.

J. FORNCROOK & CO.



WILL FURNISH YOU THE

"BOSS" ONE-PIECE SECTION

AS CHEAP AS THE CHEAPEST

And the **BEST** in the **Market.**Also **DOVETAILED HIVES**
and other **SUPPLIES.**

Write for Price List.

WATERTOWN, Wis., Jan. 1, 1892.

12-91-12

YOU
WANT
THE**Best Bee Hive**

Especially if it costs no more than the common hive. My new **Double Wall Hive**, "No. 10," is the best summer and winter hive yet devised. Takes regular "L" furniture; is lighter than the $\frac{1}{2}$ single-wall hive; may be storied to any extent, etc., etc., and is sold at a very low price. Full description in free circular. A full line of bee-keepers' supplies always in stock. Catalog free. C. W. COSTELLOW.

Waterboro, Maine.

8-90-4f

Names of Bee-Keepers.

TYPE WRITTEN.

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically (in the largest States), and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.00 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly, in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. The former price was \$2.50 per 1000, but I now have a type writer, and, by using the manifold process, I can furnish them at \$2.00. W. Z. HUTCHINSON, Flint, Mich.

For Sale: Well-equipped apiary in good location, Del. on, N. Y. Jno. S. Calbreath, Monticello, N. Y.

1852.

REDUCTION ON THE PRICE OF

1891.

Langstroth on the Honey Bee.

(REVISED.)

PRICE BY MAIL, \$1.40: BY EXPRESS OR FREIGHT WITH OTHER GOODS \$1.25.

By its copious indexes, by its arrangement in numbered paragraphs, including reference numbers on any question in bee culture, any information can be instantly found. This book is the most complete treatise on bee keeping yet published. A FRENCH EDITION JUST ISSUED.

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It is THE BEST, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year. Samples, Catalogue, Free to All. Send your Address.

We also make a specialty of Cotton and Silk Tulle of very best grade for bee-veils. We supply A. I. Root and others. 7,000 Yards just received. Prices Very Low. Samples Free.

Smokers, Honey Sections, Extractors, Tin Pails for Honey, Etc. Instructions to Beginners with Circulars Free.

Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

Hunt's Foundation

Is a superior article. Warranted good as any ever made. Dealers and others write for samples and prices. Dovetailed Hives in any quantity. Free Price List of everything needed in the apiary.

M. H. HUNT, Bell Branch, Mich.

2-92-ff Please mention the Review

(Near Detroit,)

Italian - Queens. On Their Own Merits!

6 Warranted Queens, \$5.00.
Send - for - Circular.

J. T. WILSON,
4-91-ff Pink, Kentucky.

It's Got the SNAP.

That is what our subscribers say, and they are coming in by every mail. Send 50 cents for a year's subscription to the **Missouri Bee-Keeper**. Monthly; 16 pages and cover; nicely printed on good paper. Money returned if you don't like it. Sample free.

Address BEE KEEPER PUB. CO.,
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In 1892 **LEININGER BRO'S** are going to devote their entire time to raising

5-BANDED Golden Red Clover Bees.

For further particulars write for our descriptive Catalogue, which will be ready about January 15th, 1892.

LEININGER BRO'S,
12-91-ff Fort Jennings, Ohio.

Reduced RATES. 1892. COLONIES,
3-92-21 NUCLEI AND QUEENS. Write for
TERMS. S. D. MCLEAN,
Box 304, Columbia, Tenn.

Early Queens from the South.

Beautiful Yellow, Tested and Untested Queens; also 2 and 3-frame Nuclei.

Prices	for	April	May	June
One untested queen,		\$1.00	\$1.00	75
Three " "		2.75	2.50	2.00
One tested "		2.00	1.50	1.50
Three " "		5.00	4.00	4.00

Very best, select tested queens, for breeding, \$3.00 each. Two-frame nucleus, with any queen, \$1.50 extra. Safe arrival guaranteed. 3-92-21

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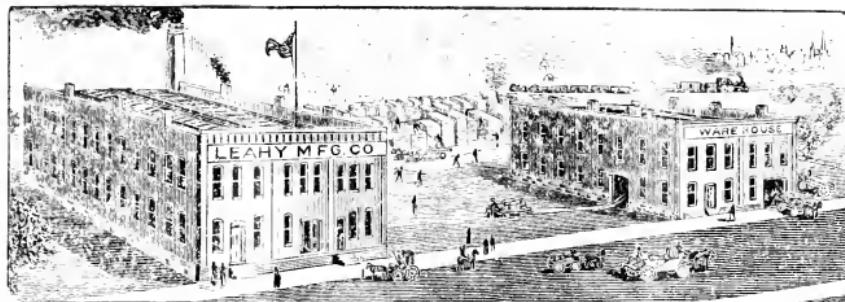


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If you are going to—

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.



The above is a representation of our factory, built and equipped exclusively for the manufacture of *Apiarian Supplies*. We have in connection with our business *lumber yard, a tin shop and a Printing Office*. All this enables us to manufacture and sell almost all kinds of goods very *cheap*. We have sold over *eight car loads* of supplies since Nov. 1, and of those contemplating buying either in *small or large quantities* we ask a *trial*. Remember we will not be *undersold or excelled in quality*. 24-page Catalogue free. Address

MENTION REVIEW.

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BEE SUPPLIES RETAIL
AND
WHOLESALE
Everything used in the **Apiary**
Greatest variety and largest stock in the
West. New catalog, 60 pages, free to bee-keepers.

Special Discount to Dealers.

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Queens and Bees
Another Step Upward; the
ALBINOS AHEAD!

While common bees were gathering dark honey dew, the Albinos were bringing in twice the amount from the fields of white, and clear, too. I never had such a large stock of superior queens and bees as I have at present; and I will fill orders, for either Albinos or Italians, at very reasonable prices. I also manufacture and deal in

**Hives, Sections, Foundation,
Extractors and Other Apiarian
Supplies.** S. VALENTINE,
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Minnesota Ahead

Why? Because in consequence of her pine forests, lumber is cheap. That's why ERKEL sells hives cheaper than any one else. Only think! single-story hives, from 35 cts. up. Two-story hive, from 70 cts. up. Other supplies cheap. Send for catalog. 3-92-tf

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Simplicity, Langstroth Simplicity, Standard Langstroth, Dovetailed and Champion Clapboard Hives, Spiders, One Piece Sections and Shipping Cases, Foundation, Smokers, etc., etc. Send for 16-page Circular.

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Sells Golden Queens

at the following prices. Untested up to June 1st, \$1.00; after June 1st, 75 cents. Tested, before June 1st, \$1.50; after June 1st, \$1.00. Queens are reared from the best stock in the country. If queens from imported mothers are wanted, it must be stated in the order, otherwise American stock will be sent. Remit by Ex. money order, on Thorndale, postal note, registered letter, or P. O. money order on Taylor. Satisfaction and safe arrival guaranteed. 3-92-tf

OTTO J. E. URBAN, Thorndale, Texas.

**PATENT, WIRED, COMB FOUNDATION
HAS NO SAG IN BROOD FRAMES.**

THIN, FLAT BOTTOM FOUNDATION

HAS NO FISH BONE IN SURPLUS HONEY.

Being the cleanest is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),
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Will find our **OUR NEW, LARGE, ILLUSTRATED CATALOGUE** and **PRICE LIST** for 1892 the Most Complete and easiest to understand: the prices, too, are **VERY LOW**. We make all styles of **HIVE**, **SECTIONS**, **FRAMES**, **ETC.**, with the greatest accuracy. Our goods are guaranteed to be the very best. If you need any supplies, write to us.

THE W. T. FALGONER Mfg. Co., Jamestown, N. Y.

Also publishers of **THE AMERICAN BEE - KEEPER**, a 24 - page monthly for beginners, (50 cts. a year). Sample copy free.

Please mention the Review.

2-92-3



**BEES
FOR
SALE.**

Colonies, nuclei,

and queens at living rates. Send for circular to C. C. VAUGHN & CO., Columbia, Tenn. 2-92-41

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Headquarters for the Albino bee. If you desire pleasure in working among bees, and wish for large yields of honey, then buy those beautiful Albino queens from my one hundred dollar queen. Untested Albino queens from same queen in season. Also tested and untested Italian queens in season. For circulars address

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No. 1, eight thick-top-bar frames, division board, super section holders, follower, wedge, tin separators, sections, foundation starters, flat cover, painted, \$1.50. Five hives, in the flat, no inside furniture, \$3.25 **J. M. KINZIE,**
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From our apiary in Texas, which is three miles from my other bees and none but the **Best, FIVE - BANDED, Golden Italian Queens** used to rear queens and drones. Our bees are the gentlest, best workers and most beautiful bees known. Safe arrival and **entire** satisfaction guaranteed. One warranted queen in March or Apr. 1, \$1.25; 6 for \$6.00. If you want the **best**, send for our Circular at once. 1-92-61

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From May 20th to June 20th, \$1.50 each. After the 1st of June there will be two breeding yards, one for Carniolans and one for Italians, and queens of either variety will be sold as follows: Untested queens, 75 c's. each; three for \$2.00; six for \$3.60. After June 20th, tested queens of either variety, \$1.00 each. For further particulars send for circular. 1-92-1f

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To a successful business are

Good Goods,
Low Prices,
Prompt Shipments.

These principles will make a success of *any* business. Ours is **BEE - KEEPER'S SUPPLIES**. Circular on application.

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My Catalogue of Apiarian Supplies is free; my Pamphlet, "How I Produce Comb Honey," Costs Five cts. Geo. E. Hilton, Fremont, Mich.

12-91-61

AFR. 10, 1892



The title page features a central rectangular frame with a honeycomb pattern. Inside, the text 'THE BEE-KEEPERS' is on the top line, 'REVIEW' is in a large, ornate, italicized serif font in the center, and 'Published Monthly' is on the bottom line. The frame is surrounded by a wreath of leaves and flowers, including large birch leaves at the top, a small sprig of flowers above the title, a cluster of flowers on the left, and a large leaf and a small sprig at the bottom right. The entire design is in a woodcut or engraved style.

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Published Monthly.

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I will send the REVIEW with—	
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Apiculturist, at .75	... 1.65.
Bee-Keepers' Magazine, at .50	... 1.40.

For Simplicity and Durability

Bingham Patent Smokers,

AND

BINGHAM & HETHERINGTON

Honey Knives,

ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker, ...	3½ inch, ...	\$2.00
Conqueror Smoker, ...	3 "	1.75
Large Smoker, ...	2½ "	1.50
Extra Smoker, ...	2 "	1.25
Plain Smoker, ...	2 "	1.00
Little Wonder Smoker, 1½ "	"	.65
Bingham & Hetherington Knife,	"	1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINGHAM & HETHERINGTON,

1-90-tf.

Abronia, Michigan



Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa.,

One of the Largest Bee-Hive Factories

in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

Hives, Sections, Crates and Foundation.

All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue.

2-91-tf

OLIVER HOOVER & CO., Riverside, Pa.

Please mention the Review.

Western BEE-KEEPERS' Supply Factory.

Largest Business of the kind in the West.

We manufacture Bee-Keepers' supplies of all kinds, *best quality at lowest prices*. Dovetailed Hives, Sections, Foundation, Extractors, Smokers, Crates, Veils, Feeders, Clover Seeds, Buckwheat, etc. Imported Italian Queens, Queens and Bees. Sample Copy of our Bee Journal, "The Western Bee-keeper," and latest Catalogue mailed free. Post-Kings, Address JOSEPH NYSEWANDER, DES MOINES, IOWA.

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Imported or Domestic, Crude or Refined. A Stock Constantly on Hand. Write us for Prices, Stating Quantity Wanted.

4-92-4t

ECKERMAN & WILL, Syracuse, N. Y.

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It's a Mistake

Bee-Keepers make, in not replacing *old, worn out queens* with *young ones* early in the spring. This re-queening

PREVENTS SWARMING

and will double the yield of surplus. I breed the "leather back" strain of Italians, and make a specialty of *contract orders*.

11-92-tf

A. F. BROWN,
Agent So. Express Co.

Huntington, Fla.

You'll Find our Strain of Italians

They are HUMMERS if you want bees for honey. Queens bred for BUSINESS and gentleness.

We make foundation as good as the best. We can furnish other supplies at wholesale or retail. Early orders get the best discount. Price list free.

JNO. NEBEL & SON,

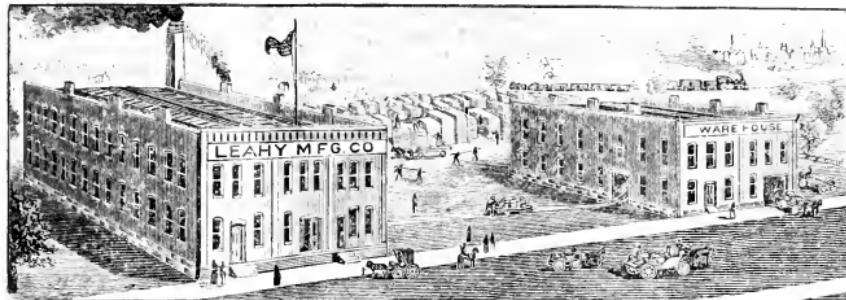
3-92-tf High Hill, Mo.



PRICES

LOW

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The above is a representation of our factory, built and equipped *exclusively for the manufacture of Apianian Supplies*. We have in connection with our business *lumber yard, a tin shop and a Printing Office*. All this enables us to manufacture and sell almost all kinds of goods very *cheap*. We have sold over *eight car loads* of supplies since Nov. 1, and of those contemplating buying either in *small or large quantities* we ask a *trial*. Remember we will not be *undersold* or *excelled in quality*. 24-page Catalogue free. Address

MENTION REVIEW.

LEAHY M'F'G CO., Higginsville, Mo.

BEE SUPPLIES

Everything used in the **Apiary**
Greatest variety and largest stock in the
West. New catalog, 60 pages, free to bee-keepers.

Special Discount to Dealers.

1-92-tf E. KRETCHMER, Red Oak, Iowa.

Queens and Bees

Another Step Upward; the
ALBINOS AHEAD!

While common bees were gathering dark
honey dew, the Albinos were bringing in twice
the amount from the fields of white, and clear,
too. I never had such a large stock of superior
queens and bees as I have at present; and I
will fill orders, for either Albinos or Italians, at
very reasonable prices. I also manufacture and
deal in

**Hives, Sections, Foundation,
Extractors and Other Apianian
Supplies.** S. VALENTINE,
3-92-2t Hagerstown, Md.

Minnesota Ahead

Why? Because in consequence of her
pine forests, lumber is cheap,
That's why ERKEL sells hives cheaper than any
one else. Only think! single-story hives, from
35 cts. up. Two-story hive, from 70 cts. up.
Other supplies cheap. Send for catalog.
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traction of the Brood Nest are duly considered; after which Comb Foundation, Foul Brood, Queen Rearing, the Raising of Good Extracted Honey, and "Feeding Back" are taken up. After the honey is raised, then its Preparation for the Market, and Marketing are discussed. Then Migratory Bee-keeping, Out - Apiaries and Apiarian Exhibits at Fairs are each given a chapter. After this comes the question of Wintering, which is discussed in all its phases. The influence of Food, Ventilation, Moisture, Temperature, Protection, etc., etc. are all touched upon. There are also chapters upon Specialty versus Mixed Bee-Keeping, Comforts and Conveniences in the Apiary, Mistakes in Bee-Keeping, etc., etc.—32 chapters in all.

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12-91-12

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From our branch apiary in Texas, which is three miles from any other bees and none but the **Best, FIVE-BANDED, Golden Italian Queens** used to rear queens and drones. Our bees are the gentlest, best workers and most beautiful bees known. Safe arrival and **entire satisfaction guaranteed.** One warranted queen in March or April, \$1.25; 6 for \$6.00. If you want the **best**, send for our Circular at once.

1-92-61 S. F. & I. TREGO Swedona, Ill.

1892.

Don't you want large, beautiful Queens, producing Bees that will just please you fully? Well, my Indians are in the lead—so my customers say. 1,048 queens sold and have heard of only two misnamed. Orders booked now and will be filled in rotation 10 per cent off on all cash orders received during January. Warranted Queen \$1.00; 6 for \$4.50. A select Breeding Queen, yellow to the tip, \$1.00. Will begin shipping May 1st. 1-92-7f

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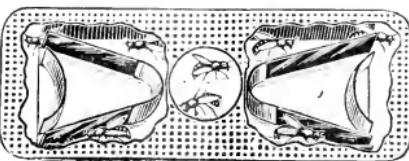
OF THE
SECOND HAND SUPPLIES

That I have been advertising in the REVIEW, the following remain unsold. 100 old-style, Heddon surplus cases at 20 cts. each; (as a non-separated case this has no superior) 50 slatted honey boards at 10 cts.; 10 "dummies" for contracting the brood nest, at 3 cts.; 20 Heddon feeders at 40 cts.; young America lawn mower, \$2.00. All of these articles have been well cared for and are practically as good as new.

I also have 2,000 new four-piece, white poplar sections at \$4.00; 50 lbs. of brood foundation, Cary's make, extra fine, at 45 cts. and a new, Stanley, Automatic honey extractor, two baskets, and each basket will take two Heddon frames or one each of the Langstroth, American or the Quinby, price \$15.00.

I would sell any of these articles for cash, or I would exchange them for extracted honey or for young, laying, Italian queens.

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Send for a sample of Hastings, "lightning" Bee Escape and you will be convinced that it is the best and most practical escape yet produced. It will clear the supers in a short space of time—from 2 to 4 hours and it is impossible for it to become clogged, as the bees cannot return. Each escape is accompanied by directions and guaranteed to do as represented. 20 cts. each by mail; per doz. 2.25. Electros, furnished free to dealers for use in their catalogues. Write for discounts M. E. HASTINGS,
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Headquarters for the Albino bee. If you desire pleasure in working among bees, and wish for large yields of honey, then buy those beautiful Albino queens from my one hundred dollar queen. Untested Albino queens from some queen in season. Also tested and untested Italian queens in season. For circulars address

2-92-3t

D. A. PIKE, Smithburg, Md.



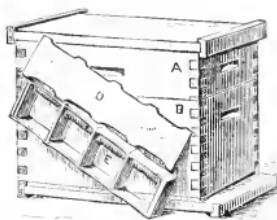
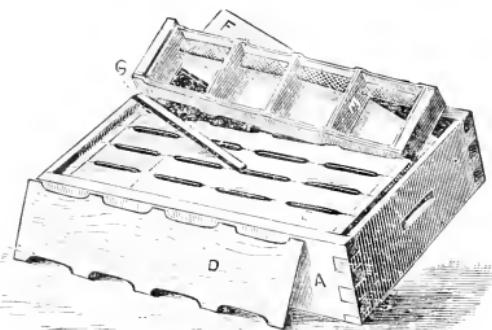
My Catalogue of Aparian Supplies is free; my Pamphlet, "How I Produce Comb Honey," Costs Five cts. Geo. E. Hilton, Fremont, Mich. 12-91-6t

Who said there was fun in SCRAPING SECTIONS,

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SECTION HOLDER

Arrangement saves scraping. Our wood separators are cut $4\frac{1}{2}$ in. wide and then slotted out. They are wide enough to cover the upright edges of the sections. By a follower and wedge all cracks are closed; and the result is that no propolis is chinked in. No amount of squeezing can close up the cracks left by the old, narrow, wood separator. Our super permits of reversing, also of changing the outside rows of sections to the center with but very little labor or trouble.



Our Dovetailed Hive is equipped not only with the above surplus arrangement, but has several other "comforts" besides; such as self-spacing Hoffmaw frames, division board and new, improved, tin rabbets. Our Dovetailed Hive is carrying everything before it. If you buy of us or our agents you get all the very latest improvements.

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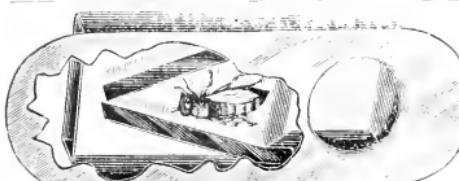
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Send for circular and testimonials, and read what others say of them.

PRICES: Each, by mail, with full instructions, 20 cts. Per doz., \$2.25. If, after three month's trial, they are not found superior to all other escapes, and satisfactory in every way, return them and we will refund your money. For sale by dealers.

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Porter's Spring Bee-Escape

Saves temper, time and bees.

PROF. COOK says: "No bee-keeper can afford to be without them."

WM. M'EOVY, foul brood inspector of Ont., Can., says: "They should be used in every bee yard in the whole wide world."

THOS. PIERCE, Pres. Eastern N. Y. B. K. A. says: "The time will soon come when all bee-keepers will use them."

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The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V. FLINT, MICHIGAN, APRIL 10, 1892. NO. 4.

Mr. Hasty, the Review, and Their Critics.

WM. F. CLARKE.

"For one slight trespass all this stir?
What if he did ride whip and spur?
'Twas but a mile, your favorite horse
Will never look a hair the worse."



I READ Mr. Hasty's sugar-honey article in the Dec. No. of the REVIEW with much interest, as I do everything that proceeds from his facile pen, and detected in it nothing "out of the way."

Hence I was at once amazed and amused at the furious onslaught of criticism which assailed him in the February issue. I supposed all advanced bee keepers had got beyond the teaching embodied in that juvenile ditty of Dr. Watts which we so often hear alluded to, usually more in jest than in earnest:—

"How doth the little busy bee
Improve the shining hour,
And gather honey all the day
From every opening flower."

I never dreamt for a moment that such masters of the art of honey production as Dr. Miller and H. R. Boardman clung to the nursery idea that bees "gather honey." Hasty is undoubtedly right in maintaining that the bee is a manufacturer, and that the

nectar extracted from the flowers is the raw material which is converted into honey by some mysterious process that goes on in that wonderful laboratory, the bee stomach. I believe also that he is quite correct in the view that the change from crude and often insipid nectar to luscious honey takes place during transit from the flower to the hive, and that the honey flavor is somehow or other "caught on the fly." Chemistry informs us that honey is very similar in its properties to sugar. They differ simply in the qualities imparted during passage through the bee-stomach. The difference is very considerable, as I know by sad experience. I can eat sugar freely, whether maple, loaf, muscovado or granulated, and I want my cup of tea very sweet; but I cannot eat or drink honey. A cup of tea sweetened with honey would sicken me. I do not for a moment doubt that honey made by the bees from sugar-syrup is as truly honey as that made by them from the nectar of flowers. Nor can I see that there would be anything dishonest or partaking of the character of adulteration in putting sugar-honey on the market distinctly labelled as such. Whether it will pay to produce honey in this way is another question, but I must contend that there is a legitimate field for experiment opened up by Mr. Hasty's article. I am inclined to think that to pay four cents a pound for the raw material, and then deduct the cost of waste in the process of transmutation, would take the gold off the gingerbread. Moreover, I do not know how the bee keeper could feed his bees with sugar-

syrup half-a-mile away from the apiary without all the bees in the neighborhood sharing in the plunder. Dr. Miller's idea of legislative protection in the sole-possession of a given area, would be needed to enable the sugar-syrup feeder to secure his own property.

But I took up my pen mainly to contend for the propriety of discussing this matter in the REVIEW. I must say, Mr. Editor, that for a comparatively young soldier you have "stood fire" very bravely. Rather more than a year ago, Editor Newman excused your article on "Bee Journalism," which he considered "a great piece of foolishness," on the score of "editorially-youthful indiscretion." Well, I am sure no battle-scarred veteran could have comported himself with more grace, dignity and firmness, than you have done under the triple attack to which you have been subjected. You have stood firm as a rock, and yet been "meek as Moses." I question if some of the other journals would have inserted such sharp criticisms. Their motto is, "Let us have peace." Yours is, "Let us have truth." "Dot ish goot." We don't want any *facts* concealed. The trio of critics do not find fault with the Hasty article as incorrect in a solitary particular. Mr. Boardman calls it "stuff." Well, that is not necessarily a term of opprobrium, although it is evidently used by Mr. B. with that meaning. But we sometimes say of a piece of work, there is "good stuff" in it: or even of a man, that "he has the right kind of *stuff* in him." The objection of our friends appears to be merely one of policy, for surely they must be convinced, on reflection, that there is no parallel whatever between the Wiley pleasantry and the Hasty article. Well, I never could see that it is wise or right to suppress the *truth*. It has a peculiar faculty of coming out whether or no, like fire hidden in a heap of shavings. We should rather strive to ferret out the truth than to conceal it. Lord Bacon has a noble saying to the effect that "there is nothing better than for a mind to rest in Providence, move in charity, and *turn itself on the poles of truth*." Some poet has said:

"Sieze upon truth where'er 'tis found,
On Christian or on heathen ground;
The plant 's divine where'er it grows,
Reject the prickle, and preserve the rose."

Right you are in saying that "heretical ideas are usually advanced ideas." The heresy of yesterday is the orthodoxy of to-

day, and that, in its turn, will be the heresy of to-morrow. Free speech is the grandest method of eliciting truth, and, for my part, even though I do not agree with a man, I respect and admire him if he has the courage of his convictions.

GUELPH, Ont.,

March 3, 1892.

Some Graphic Criticisms of the Dec. Review.

They were sent as a Private Letter, but
are Published by Permission.

A. SNYDER.*



I WAS right glad to meet you at Albany, Mr. Editor, if it was only for a few minutes. I had often tried to imagine how W. Z. Hutchinson looked. Now I know. I had thought you a small man, but, instead, you are a

big, nice-looking fellow. Your journal will

be very much more interesting from now on

for the reason I shall have your looks in

plain sight.

The Dec. No. is the most interesting of any, so far, for the reason you give us the portrait of each writer. It's the best thing you ever did for the REVIEW.

You will remember I have been keeping bees all my life; keeping as many as 350 colonies at times: usually about 225. Some three years ago I sold out all the bee business and went on the road as a drummer, selling goods, but I still have the bee-fever, and its getting worse all the time. I have also been in the poultry business quite a little, but sold the poultry when I did the bees. I am making great calculations on buying 200 colonies of bees and a nice flock of poultry next spring, and I expect to make it pay well: and I just as soon as I can get to

*A. Snyder was born 48 years ago in Rensselaerville, Albany Co., N. Y. Was a farmers' boy. Lived in Albany Co., nearly all his life. Has kept bees 23 years. Has usually had a hive over 200 colonies. His largest crop of honey was 20,813 pounds. He took charge of 400 colonies of bees for E. T. Flanagan, of Belleville, Ill., moving them to Kenner, La. He was in Va. two summers taking care of bees. He has also been in Cuba in charge of 500 colonies for a rich Cuban. During the last three years he has lived at his present place of residence, and been a commercial traveler, but he is going back to bee keeping this spring.

it I expect to start small fruit and fish culture, and I will make it go "red-hot." Drumming pays well enough, but I don't like it, and I am going back to my old bee and poultry business, sure.

I read the Dec. REVIEW all through last evening, and am going to read it all over again to-day, and if I find something I like or dislike may mention it. You won't find fault, will you, Hutch.? But first I must tell you wife is baking a nice turkey and a nice spare-rib for dinner, and the little young Snyders are out by the barn playing shinny.

J. A. Green thinks if we could learn the causes of failure of a honey crop we might be able to find a remedy. Mr. Green goes back on buckwheat as a honey plant. I think it one of the best. Up in Albany Co., N. Y., where I kept bees, buckwheat is the farmer's favorite crop, and they sowed hundreds and hundreds of acres, and we bee keepers got tons and tons of honey from it *every fall, no failure.* Mr. Green says two-thirds of his crop was from sweet clover. Good for him. That's the stuff. I think well of sweet clover, too, and have a sugar barrel full of the seed that I intend to scatter wherever I locate.

R. C. Aikin starts out by advising people not to put all their eggs in one basket. That's right—I mean to have several baskets each on a separate shelf. Mr. A. has great hopes in migratory bee-keeping. Well, it does look perfectly reasonable, but where is the man who has made it pay? You will remember E. T. Flanagan, of Bellville, Ill., sent me to Louisiana one fall with 400 colonies of his bees with the idea of having the bees work there through the winter and up to such a time when they could gather honey at the North, then move them back, but it was a *complete failure*: not so much on account of no honey to be gathered in Louisiana, (there was lots of it), but through mismanagement in moving South. Mr. Flanagan was very largely to blame himself: having left undone something that he should have done. It will require more than an ordinarily cautious man to move bees long distances successfully: yet, I, well—I *hope* it can be done, but there are so many chances to run in moving, I fear it will always be a dangerous undertaking, yet the idea does look reasonable.

Mr. Aikin also says do some thinking. I suppose he not only means in regard to bee keeping but in regard to other matters, such

as politics, religion, etc. That's right, be a man and think for yourself.

Oh! here comes E. E. Hasty, the sugar-syrup advocate. Well! Well!! Meal converted into milk and butter; sugar into honey. What's the matter of that? I have to disagree with Mr. Hasty on non-swarming. I believe one swarm from each old stock and the swarm set in place of the old hive and old hive set one side, *a la* Heddon, is better than no swarms.

Here comes "Rambler." Well, who is Rambler anyhow? [J. H. Martin, formerly of Hartford, N. Y., now in Calif.—ED.]

C. C. Miller gives us good, sound advice: says we must have some other business along with bee keeping or we may starve, but says he is going to stick it out a little longer with the bees. That's right, Mr. Miller, stick and hang, but after Hasty tells everybody how to make honey out of sugar where do you imagine the price will go? away *down, down, down*.

Kingston, N. Y.,

Dec. 25, 1891.

Ventilation, Fastening of Frames and the
Loading of Bees in Shipment.—How
the Raising of Sugar - Honey
May do Harm.

J. A. GREEN.



In shipping bees, whether by rail, boat or wagon, the one great point to look out for is the ventilation. In cold weather, little or no ventilation is needed; and in the spring, when the bees have all they can do to keep the brood warm, too much ventilation may do much injury. As most shipping of bees is done in warm weather, there is but little likelihood of ventilation being overdone. It is usually only by sad experience that the bee-keeper learns how very important is an abundant supply of fresh air in warm weather. With very strong colonies in hot weather, a space where the bees can cluster away from the brood is very desirable, though I have hauled the strongest colonies through a hot August sun without it, the whole top and

bottom of the hive being covered with wire cloth. Perhaps the same bees might have fared worse if they had been in a close box car, without a circulation of air around them. In hauling bees now I use a rim covered with wire cloth on the top of the hive, which allows them some room to cluster.

The hive which has frames at fixed distances never shows to better advantage than when used for shipping bees. All the labor of fixing the frames so they cannot swing is avoided and the hive is ready for hauling or shipment at all times, by simply shutting up the bees, with due regard to ventilation, and fastening the parts of the hive together. If in addition the combs are built in wired frames, the shipper need have no fear of accident from broken or swinging combs.

I once hauled 100 colonies of bees on deep hanging frames, 60 miles over very bad roads with very little trouble from loose frames. The frames were secured by simply nailing a piece of lath over the ends of the frames. For short distances I have often hauled and shipped them without any fastening. This is not advisable though when bees are to be shipped by rail or trusted to inexperienced hands. At such times the greatest care should be taken to have everything so secure that there cannot by any possibility be any breaking or coming loose. I used to ship bees between two of my apiaries that were on a railroad, each apiary close to the station. A frame of wire cloth was slipped over the top and bottom of the hive and secured by tying a strong string around the whole. I never had any accidents, because I always accompanied them and helped load and unload, but the train men were always afraid of them, which is not at all strange. I should not wonder if it was such things as this that made some railroads decide that they would not carry bees as freight, except in car-load lots. I know better now and would not trust a package of bees out of my hands without knowing that it could stand rough handling if necessary.

One very important point in shipping bees, is to load the hives so that the combs will run the long way of the railroad car—parallel with the rails—but crosswise of the wagon, when hauled.

The reason for this is that on the railroad the only severe shocks come from the end, while on a wagon the worst bumping is from side to side. This last is easily tested. While in the wagon, hold an ordinary pail

by the bail. It can swing freely in one direction only. If held so that it can move only lengthwise of the wagon it will not swing nearly as much as if it is free to move crosswise. On steep, rough hills, or where it will often happen that both front wheels strike an obstruction at the same time, it might be best to reverse this and have the combs run the long way of the wagon. But ordinarily the other way is better. Springs under a wagon for hauling bees are a very good investment.

I used to sell bees by the pound. I gave it up because I did not get orders enough although my prices were too low for much profit. I never had many losses in shipment and at the prices some others got readily enough, it seems to me it ought to pay.

I think one trouble was that in the effort to make express charges as low as possible, too small cages were used, which, with the attempt to ship unreasonable distances, made the losses so great that it was unprofitable. I did not get as many or as full reports from my customers as I would have liked, so I do not know whether they were successful with them or not, but as some of them repeated their orders they must have been satisfied. I have no doubt that a skillful bee-keeper could use such bees successfully even though the plan may not be practical for novices.

I do not think it is best as a rule to get small lots of bees without queens, expecting to unite them with other colonies. Get enough to make a fair little colony, having their own queen with them. Such a colony will ship more safely than a smaller one having no queen or means of raising one, and will be worth something when it has settled down to business. If small colonies are wanted, let the receiver divide them himself after they have settled down into a normal condition.

I must say that I agree in the main with those who have protested against the publication of the sugar-honey article. Undoubtedly it has a basis of truth. That makes it all the more dangerous. It is not wise or best at all times to tell the truth. By this I mean that there are times when it is better to keep silent than to tell what is perfectly true. A half truth may be deceptive. "There is nothing lies like the truth" and the exact truth spoken at the wrong time, in the wrong way, under the wrong circumstances, may produce the falsest of impressions.

I will admit that I believe if sugar is fed to bees under exactly the right conditions the product will be so changed that it is practically a variety of honey. But these conditions are almost impossible to secure in practice.

The sugar must be fed at some distance from the hives. There are few places where this would be possible. No one could afford to feed all the bees for miles around, to say nothing of the wasps, hornets and wild bees of various kinds that so freely visit out-door feeders. The impracticability of this robs the scheme of its only chance of an honest success. It will probably be tried by feeding in the hive. It will be fed more rapidly than the bees can change it. Very likely a cheaper grade of sugar will be used, and the result will be that the product will be unmistakably from sugar, and if only a little of this stuff is placed upon the market, it may prove a lasting injury to pure honey. Some men might produce a good article and sell it honestly. Many would do neither. There is everything to lose and little to gain. Why encourage the thing?

While I am sorry that you admitted the Hasty article, I am glad to see you have the courage of your convictions and stand by it. Your subscribers will at least know that you will not drift with every wind.

DAYTON, Ill.

Mar. 25, 1892.

The Grading of Honey of No Value.—Why and How it May do Harm.

E. P. GIBBS.

THE first thing to consider, in the grading of comb honey, is to get some to grade, the next, is to decide why it is to be graded; and next, what good will be accomplished if grading is established.

I suppose that the Northwestern bee keepers at Chicago discussed the first proposition until they thought they had worn it out, and then took up the subject of establishing a grade, or grades, because they had nothing else to do; at least it looks that way to me. I can see no use of an established grade unless bee keepers expect to sell by it. If so, it seems to me they will be obliged to have a regular system of inspection in all the markets where their honey is sold, so that honey of any grade can be sold without the purchaser seeing it: the same as wheat, corn and all kinds of grain is sold at present in Chicago and all the large cities. If this

is the object of the grading, it will be well to ask who will appoint the inspectors, who will have to pay them, and who will receive the benefit of the inspection, the buyer, the seller or the commission man?

Now, I believe it is a fact that it is admitted by all the country grain shippers and grain raisers that the Chicago grain inspection is the biggest steal upon the producers of grain that has ever been perpetrated upon any people.

There is no way of knowing, when you load a car with grain for the Chicago market, whether it will go No. 1, 2, 3, or even no grade. A load of half-rotten, musty grain, is as likely to inspect No. 2 as is good, sound, clean grain. Under these conditions the buyer does not pay the price of No. 2 corn to the raiser, although he may know that it is No. 2 by the requirements of the inspection, consequently he pays the price of a lower grade. If it happens to pass as No. 2 it is his good luck, but the producer has to pocket the loss all the same. I had occasion to ship a load of rye a short time since. The requirements of the inspection on No. 2 rye is that "it shall be good berry, dry and reasonably clean." This rye was raised by myself, was plump, bright, clean and dry, and had been kept in the bin from about August 1st to Nov. 1st, and was as hard as flint with not a grown kernel in it. It was sold as No. 3 rye and return made in accordance with that grade, which was about six cents less than No. 2 was bringing.

I protested, and the commission man sent me the official certificate of inspection, which read something like this, "Car No. 509, No. 3 rye, soft and grown."

It is only a few years since that a prominent newspaper of Chicago published a statement of the amount of wheat inspected in and out of the Chicago elevators, and the report showed that several hundred thousand bushels more of No. 1 wheat was inspected *out* than was inspected *in*, the elevator men pocketing the difference.

Now, if you want to establish a grade for the purpose of having an inspector, can you expect the producers to receive any fairer treatment than the producers of grain? If not, then what do you want of it?

I presume that all honey producers, or perhaps I better say apiarists, grade their honey. That is, the whitest and nicest is not packed with the indifferent, and each man packs as he thinks is for his interest, and

there are men perhaps who have been at it long enough so that their brand upon a case, if it is marked No. 1, is a guaranty of fine quality; and this to the man who is acquainted with the brand is sufficient; but to the stranger it is no good, and he wants to see the inside of the case. This is the case with all goods, and there is no certainty that because you have put a No. 2 mark on a case of honey or a tub of butter that it will go to the consumer with that brand upon it. I was once in a commission house in Chicago when a man came in and wanted to look at some butter. He was given a tryer. The seller opened the tubs and the buyer went through them, picked out what he wanted, asked for a scraper, and scraped off every mark on each tub selected. I asked my friend, the commission man, "Why did he scrape off the brands?" The reply was, "I don't know, he may be a commission man himself."

Now, my advice is, don't try to get up something that cannot possibly be of any use to you, but will be a positive injury. Do your own grading at home and be honest about it. Don't put in a nice, white clover front and fill out the rest with honey dew. Put your clover honey by itself, and mark it "white clover," and your honey dew by itself and mark it *honey dew*, and if you have to mix some nice honey with that that is not so good, put a mark on it, (the best in front, of course), and then call the attention of your commission man to it and tell him what it is.

Build up a reputation for your goods by good, square dealing, and have them sold *on their merits*. Let the buyer open the cases and judge for *himself* as to its being No. 1 or No. 9. Don't fix up a deal so that the inspector can stand in with the buyer and sell your nice, white clover or basswood honey for the price of buckwheat or honey dew.

LYNDON, Ill.,

Jan. 31, 1892.

Let the Truth be Known.—Foundation and the Wiley Lie.—Raising and Selling Sugar-Honey not Adulteration.

GEO. R. WELLER.

MR. EDITOR:—It is refreshing to see that you are not "bulldozed" in regard to the article of Mr. Hasty's about feeding sugar to produce comb honey. Most all advances have met a similar "hue and cry" when proposed.

If the REVIEW is to represent "advanced bee culture," let it do so; that it has done so

is the one cause of its success, and when it fails to give "the truth, the whole truth, and nothing but the truth," through fear of lowering its subscription list, or other interested motives, it should, and doubtless will, be added to the long list of departed bee journals.

This same "roar" followed the introduction of foundation into sections—"the bees did not make it," "consumers will not buy it," "the business will be ruined," etc., etc., etc. However, it was the *foundation* on which the "Wiley lie" rested, and was its staying power: the atom of truth in it that caused it to live. The extra life stirred into beedom generally, by this same lie, resulted in more benefit than harm to the pursuit.

People buy what they like, what suits the taste or satisfies the eye, etc., etc. They object to honey adulteration, because they think the quality is injured thereby.

Butterine sold as butter is a crime; sold on its merits it is legitimate and injures no one except as it comes into competition with other articles. If honey can be manufactured from sugar, it is *honest business*. The word adulteration does not apply. If the product is superior, and anything else would not pay, the result would be good. By all means, let honey be sold as honey; but if the lots of poor stuff annually put on the market, *pure*, mind you, which is dear at *any* price, and which causes *suspicion of adulteration*, and other abominations, could be manufactured some, and improved thereby, how the business would be helped.

As to the advisability of its discussion, while judgements differ, both sides should be heard. For years our business has not prospered, until it would seem that we must improve or quit. Who knows but that by feeding sugar we may get some of that best "Chicago grade" which seems so scarce?

It is hard to advance. To few is it given to originate. Where one is ready to advance about a dozen are ready to pull him back. Stand by your guns! If there is anything in this let us get it. If this should be the thing to put the business on a paying basis again, how are we to know it, except by exchange of ideas and results through the journals?

If it costs thirteen cents a pound to make comb honey as at present conducted, or anything like it, let us have all the ideas possible towards cheapening this cost, increasing the product or otherwise, to enable us to give better food and clothing to our families.

They say "this should never have been published," "It was a great mistake," etc., etc., and call everybody's attention to the subject, in the most conspicuous way at their command. If they think it should not be discussed, why don't they keep still? They are making more fuss than any one else, and in a manner calculated to attract the very attention it would seem they would avoid.

BERLIN, Mo.,

March 1, 1892.

**How to Rear Bees in the Spring.—Uniting.—
Keeping Records.—Artificial Pollen.—**

Spreading of the Brood.

R. C. AIKIN.*



In our last we said the first general examination would be last of March, or first of April. Of course the date depends on the weather: whether the spring be early or late; but it should be when the weather is warm, and after the bees have flown freely, cleaned house, and gotten things in shape; i. e., started brood and settled down to business.

We think it pays to unite some in the spring, if there be queenless colonies. Give such bees to the colonies that are most in need of bees. I would not unite colonies having queens, so long as such colonies can be preserved, even if it be necessary to give bees from some strong colony. The colony that has too few bees to build up of itself is too weak to care for brood given it, so we would give bees and not brood.

We unite colonies by placing one above the other, with a quilt between, saving a hole in it; sometimes without a quilt, by shak-

*R. C. Aikin is 37 years old. Was born in Ohio. When five years old he accompanied his parents to Southwestern Iowa, where he remained until the year 1885, when he went to Colo. He early took an interest in bees and kept them with varying success in Iowa. When he went to Colo, he took twenty colonies with him, but by Dec., 1890, they had simply STARVED OUT. During the years of 1890 and 1891 he was in the employ of the Hon. W. C. Alford, running apiaries for him. He and a brother, with whom he makes it his home, now have a little less than 400 colonies in partnership, and expect to make a specialty of honey production. His hobby is the getting of large yields of honey from few colonies.

ing bees in front and allowing them to run in; or by letting them get so cold they are glad to get anywhere 'tis warm, then dump them right in; also by placing the combs they are on, in one side of the hive of the colony they are to be united with. If more care is necessary, rob them of combs and stores, and leave them so from half an hour to half a day, or more. After this they will perform as if robbed of their queen, and may be united direct in twenty minutes to half an hour. The amount of bees, the kind of day, time of day, kind of hive, etc., determine what plan I use.

A record is kept with a lumberman's crayon (a heavy lead pencil will do) on the front of the hive, thus: 3-20, 4-3-8, which means March 20th, bees 4, brood 3, honey 8, grading on a scale of 10. After the date the first figure tells how many bees. 4 is 1 point below an average, the proportion of brood a little less, while honey is abundant. The standard by which we grade is *our* estimate of what they should be at that date. A colony graded 5-5-5, in May, does not mean the same amount of bees it would in March, but several times more. The amount of bees, brood and honey is graded in proportion to what it ought to be at the date of entry. After the day's work is done, a few minutes work copies the record into a book, with enlargements if necessary, such as, "united with," "queenless," etc., as the case requires.

After this work is done and all colonies are covered up again snug and warm, with stores to last them five or six weeks, but little remains to be done in the yard for three or four weeks, except occasionally looking after the weak ones to see that they are not robbed.

However, there is one other matter that demands our attention very soon after spring weather comes. Our location seems to be short in pollen, and when brooding starts in earnest, the bees visit mills, feed-boxes, granaries, in fact anywhere almost that they can get a floury substance to substitute for pollen. They will hunt it out almost as quickly as honey, causing horses to leave their feed, and even making holes in grain and flour sacks for it. So, both to avoid the nuisance, and to supply their needs, we feed chop or flour in open troughs or boxes in and about the apiary. But just so soon as natural pollen can be had, they cease to take the chop. Our first pollen is from cottonwood bloom.

This practically covers our management up to about May 1st. With the closing of April we do not expect any more losses. The colony that can't pull through to May 1st usually does not pull through at all. The beginning of May should find each colony with three or four combs of brood, and bees in proportion. We expect the honey flow to open about June 15th to 20th, so we will have forty-five or fifty days to rear bees for honey gathering.

We now examine each colony again, to ascertain the amount of bees, brood and honey. If any are now too weak for rapid brood-rearing, they should have help. If the weak condition is the result of a poor queen, but little can be done for them until a young queen can be raised. If the queen be good, we give the colony some bees from one that can spare them. We now strive to have every queen do her best. We continue the chaff or other protection. A colony protected can cover more brood than one not protected, and if the queen will do her part, we get more brood.

We have practically no honey before June 15th, and have to depend on old stores for brood rearing, so the stores go as if by magic, and care is necessary to avoid a shortage in honey and cessation of brood rearing. A prosperous colony will consume from forty to sixty pounds of honey from fall to honey flow again, or say till June 15th. If a colony crowds the brood and honey, we would exchange a comb of honey with some colony that has empty comb. We think we get brood faster if the queen can always have plenty of empty cells, so long as there are stores enough in the hive.

We endeavor to keep down drone rearing. It costs too much in honey and bees to raise a lot of drones. Six inches square of drone brood is so much loss of honey consumed. Rather have the hive just that much smaller, and save the honey that would be converted into drones, and save their nurse bees for honey gathering.

Some object to having a large force of workers at any time previous to the flow. I believe that we can afford to board a whole hive full of extra workers, even for three or four weeks, and then be well paid if we don't get more than a week's work out of them. So after May 1st we get bees, and keep getting bees. The more bees we get the happier we are.

Sometime in May we begin to spread brood. We do this when making our regular

rounds of examination, which is about every ten or fifteen days. Should a colony spread its brood nest crosswise the combs, I change ends with each alternate comb, causing them to fill out to the end. After that, I spread the other way. However, a word of caution here. No one should spread brood indiscriminately, and before doing very much of it, one should have practical knowledge of when, and how it should be done. Go slow until you know you can do it right.

This line of management is followed up to near the honey flow. In fact, quite to it. Some things remain yet to be done before the flow comes. These will be discussed in our next.

LOVELAND, Col.,

Feb. 22, 1892.

P. S.—I forgot to say that we clip all queens' wings in the earlier season while they can be more easily found. Also remove chaff protection last of May or first of June.

R. C. A.

Hundreds of Sections of Sugar Honey.—Pure,

Granulated Sugar Only will Answer.—

Poor Grades of Honey Keep
Alive the Wiley Lie.

C. W. DAYTON.

MMR. EDITOR:—I see there is a great swarm of bee keepers attacking you on a count of that Hasty article. I have not yet seen the article, but I know that what you say on pages 40 and 41 of the Feb. REVIEW is a *fact*. Dr. Miller, on page forty, speaks as though Mr. Hasty had never produced a pound of such honey. Now I have had a *hundred* sections filled with granulated sugar, and the equal to which I have *never seen in the natural product*, either in *taste* or *appearance*. I never sold a pound of it, but used it all for winter stores, and I now have eight or ten colonies which are wintering on granulated sugar stored and capped in sections. I used sections because I had more sections than brood combs.

These bee men who are so much worked up, would, I presume, admit this kind of winter food for the bees, but if, from *choice*, I place a section of it on my table, it is "nonsense." The bees may eat and acknowledge the goodness thereof, but I must favor ignorance—"for policy"—and to mislead the public.

I think I know what kind of honey I prefer; those I sell honey to, prefer about the same as I do.

There is a difference in all kinds of honey as regards the quality, just the same as there is a difference in butter. I can buy butter here for twelve cents per pound, and there are also butter makers here who sell every pound they make for twenty-five cents per pound, and the twenty-five cent kind is the kind I prefer and have use for three times a day. The fact is, the twelve cents a pound is a high price for the twelve cent butter, and twenty-five cents per pound for the twenty-five cent butter is just fair.

No one finds fault with paying a high price for an excellent article, but in finding due fault with a poor article the price is not usually considered.

The longer granulated sugar honey is in the comb the more it has of the oily, twangy, honey taste. Anything less than absolutely pure sugar is not so. Even coffee A. gets poorer and poorer to a perceptible extent.

I have experimented with a hundred or more sections full of the light brown sugars, which, at first, had a somewhat agreeable taste; but, after being worked over by the bees and stored in the combs it lost every vestige of good taste or flavor, and, instead of improving as pure sugar does it became worse and worse.

The trouble with these bee-keepers who are making this great hubbub is that they have not experimented and consequently do not know what they are talking about, but, like an enraged bee, think they should *sting* some one.

One season I sold 10,000 pounds of honey from house to house, and hundreds of times did I hear accusations against bee men of their feeding their bees and adulterating their honey, and I found that these accusations were not made without some cause. One prevalent cause was that honey men had been along selling a *poor* grade of *dark honey* for a better quality than it was. In twenty or thirty instances in the towns of Calmar, Ossian, Castalia and Postville, Iowa, a honey man preceded me and sold a kind of honey which was nearly white in the appearance of the cappings, while the *honey dew* inside was a bluish black and had a decidedly bitter taste. He sold this worthless trash for twelve cents per pound where I sold basswood at fourteen cents. These persons bought the honey for a luxury, and it proved to be disgusting. Such honey was not worth four cents. It was not fit to offer. The fact was he had experienced a honey failure that season and either did not know it or else

sought to make up the failure by cheating some one. In nearly every instance where this honey was purchased I sold another quantity of basswood honey. I found nearly every one of those who purchased the poor honey so sure that he had fed his bees upon some vile mixture that it was entirely useless for me to offer any arguments to the contrary. While he did not adulterate the honey it amounted to a complete counterfeit that would not pass worth a cent. A very poor quality of honey was sold for a good quality. There are as many grades of natural honey as there are of butter or sugar.

From numerous experiences of this kind I have come to the belief that the Wiley lie is only a text for the "clack" of the newspapers, while the offering of poor kinds of honey and poorly ripened honey has fed and kept it alive, and every sale of poor honey brings it to mind.

The outcome may be seen, which is, if we could blot out the Wiley lie entirely we would gain the partial confidence of consumers again, and taking advantage of this confidence place larger quantities of green, bitter, and shiftlessly produced honey on their tables.

My advice here is, to get the quality of our honey *up*. Don't offer to sell any we would not eat ourselves.

The only advantage of squelching the fact that pure sugar will produce a good, pure and palatable luxury is, that poor grades of floral honey may creep along in the guise of purity and excellence under the name of "honey," while customers are duped and deceived therewith. It may truthfully be claimed that it was "gathered and stored by the bees" instead of by the bee keeper, because people have more confidence in, and more forbearance with Nature, instinct or dumb animals than in him who pockets the cash. The aim should be to *please* consumers instead of *getting rid* of the honey crop. Raise fewer tons which we may be prouder of, that when we sell we may have a "whole heart" instead of "half a heart," and when making a sale we will not need to *dodge* such things as the Wiley lie. The Wiley lie and faulty grades of honey, (which every bee keeper produces more or less of), stick together like little brothers, and a truly respectable quality of honey is a giant in full armor in comparison.

Every producer should accompany his honey farther than to the border of the

apiary or even as far as the R. R. station ; he should endeavor to scrape up courage enough to keep in seeing and hearing distance (especially of the off grades) until it has disappeared down the consumer's gullet and his lips are closed behind it.

CLINTON, Wis.,

March 5, 1892.

Comments on a Beginner's Day-Book.

No. 4.

E. E. HASTY.

DURING April I devised the excellent hive-scale (weighing ounces as well as heavy weights) which is described and illustrated in *Gleanings* of Sept. 1880, page 416. I think an enterprising beginner should always keep a colony on an accurate scale. In so doing he will get much accurate information he is not likely to get in any other way. Scales only weighing pounds and big fractions are no good as educators. At the opening of the season I had no scale.

"April 5th 1880. Many of the incoming bees have no pollen, although they seem heavily loaded. I judge they have found honey somewhere—soft maple possibly. The willows I saw swarming with bees yesterday have none to-day."

I think that my conclusions were sound, and that I was coming on well for a beginner. How it makes a greenhorn grow to feel that his cattle are hauling in valuable material! The citation illustrates also the enterprise and practical turn of the bee—to day at one thing, tomorrow at another ; always with her eye on the main chance.

"April 6th. Gloomy. Thermometer 42° 49° 37°, and snow at night. Made and painted a comb-carrier for both kinds of frames."

This was one of my best day's work as a beekeeper. A comb-carrier is an article of prime utility in the yard—in fact there should be a pair of them ; for we carry two heavy pails of water almost as easily as one. I think the brethren often get along with little things that hold only two or three combs, and sometimes without any carrier at all. My pair (for I made another the next day) are jolly, great big ones, yet light and bee-tight—and none too big. They are made of thin pine, ribbed on the bottom and around near the top with wooden bars. Two bails, one a few inches from each end, swing together into the hand for carrying. When I bought the apiary, it had Gallup and Langstroth frames in about equal numbers ; so I sized my carriers to hold Gallup frames

crosswise, or Langstroth frames lengthwise, as convenience required. Of course, in an apiary run for extracted honey there should be a regular extracting house, and some sort of car or wheelbarrow on springs to wheel combs up to, or into, the door. But I am only lately working into extracted honey. I have no extracting-house yet, and do my extracting here and there and everywhere—when robbers are very inquisitive, up stairs in the house—so a barrow would hardly fill the bill for me.

"April 15th. Mild spring day. Went through seven colonies. Of the up-stairs colony 100 bees are left. Set up a water fountain giving a little sweet and salt water."

How about water fountains any way ? Are there a dozen practical men who keep them up steadily ? I kept up mine for a number of years, several times improving and re-improving the kind of fountain. I thought to medicate the water a little, and so improve the general health of the bee. Willow (*a la Virgil*) and salt, and sulphur, and lime properly tempered in water, would help the bees in their battle for life against organic germs. Think so yet. But I kicked entirely out of the traces after awhile, and said "Here, you little rogues, after all my free medical talent, and my time spent waiting on you, more than half of you will be going off to some favorite watering place of your own. You can just go for all me, the whole of you." And when they besiege the pump, a wad of clean cloth stuffed in the nose, and a little coal oil judiciously sprinkled around below, sends them about their business.

"April 20th. First lesson at handling queens. The queen of 3—5 now up stairs, having but 61 bees left. I caged her and put her in 2—7. A queen cell had hatched there. I found the virgin. Awkward attempts to capture her poked her off on the ground. Could not find her at first ; but later she was found and caged. Peaches begin to bloom."

This nervousness of beginners in their first attempts to lay hands on her royal highness is a well-worn theme of humorous and would-be humorous remarks. Guess I won't try to thresh over such old straw. And if you are a beginner just possess your soul with patience. Your hands will become steady after awhile. How we love to see the peaches open out ! Look like life, and business, and genuine posies without any fraud about them. One of the things I would like to know is how peach honey tastes : Still in ignorance. Mighty "kittle" piece of business to get spring honeys without the bitter of willow and poplar mixing in.

"April 21st. Warm; thermometer 47° 74° 60°. Finished and painted the hive-balance; Went through 12 colonies. Released the caged queen in 2-7; putting in at same time a frame with eggs, and a frame with freshly uncapped honey. Bees gradually piled upon the queen, and I heard one snarl. The mass did not seem angry. Left her to her fate."

She came out all right. This is not quite up to present high water mark in queen introduction; but I think it shows budding talent in the business. The eggs would make a healthful counter excitement a few hours hence, and the uncapped alien honey would make an immediate excitement—unheard of rain of plunder! The old saying about Satan finding mischief for idle hads to do applies very well to bees when a queen is being introduced.

"April 23rd. Cold rain. Thermometer 45° 42° 42°. Made bag-weights. Another vain journey for the queen."

Many are the bee-keepers who can drop a tear with me, so to speak, over this dreary experience. Post office four miles away. No conveyance but Shank's mare. And Dr. Mason isn't the postmaster either. He simply says "No sir." in that even, passionless tone, "fit neither for loving nor hating," that the human postmaster is so sure to acquire. Really expects you to turn around and go quietly home, without any sympathy, and without any oil and wine poured into your soul. Little cares he how awfully, *awfully* you want that queen. Won't even promise when he will deliver her.

But those bag-weights: they are cheap and handy, and will do lots of service. I had both hive-scale and honey-scale and wanted more pound weights, also some fractions of pounds. Make little bags of strong cotton drilling; weigh in pebbles to the exact amount; sew up tight. Good enough for ordinary purposes. For ounce weights cut off chunks from a bar of lead; and whittle them down carefully a little more, and a little more until exact.

"April 24th. Chill and dark. Some painting. Michigan queen came. Go' her in the evening [Saturday] with one third of the bees dead—of thirst probably, as they have been without any honey or water since Tuesday, with only candy. Watered the bees and tucked the cage under my pillow. Can't introduce her until Monday."

Two Sunday schools in different neighborhoods, and a preaching appointment too, filled Sunday too full for even a little work in behalf of my tired queen. By the way, how's that for speed in Uncle Sam in getting a queen less than 100 miles? This queen was from F. L. Wright—had a record of 107 lbs.—her mother a record of 200—pure black.

How the world changes, and we with it! In those days they who cultivated the black race did it almost in secret for fear of persecution. To say a word in favor of anything else than pure Italians was almost as bad as to defile the mouth and stain the soul with the corrupt word, sugar-honey. Now we can openly prefer hybrids, or blacks, or whatever we choose, and nobody throws a single club. I used this queen to raise drones, and scattered them around the apiary somewhat. Think she was much damaged by the trials of her journey—not very prolific except of drones; died the next spring; and her direct line became extinct soon after.

"April 29th. Warm rain clearing with wind. Ther. 52° 64° 50°. Run O. Loss 4 oz. Over-handled bees. Left a queen in the comb holder, and had some difficulty in finding where she belonged. The virgin I took out the 24th was dead in the cage this morning. Nine bees were dead and twelve living. They were well wrapped and on the mantel, and had candy and a bottle of water. Suspect queens don't work well at candy and water, and that the bees have nothing to spare to feed them. Bottle of thinned honey would be more to the purpose. Made a queen-cage of a partly filled section and sliding glasses held by tin strips. Visit from John Y. Detwiler."

Here my day's record is getting settled into its final shape—first the weather, second the temperature, next the number of ounces gain of the scale colony, next the number of ounces in weight lost by night. This last will be large when there is much young brood, or when much thin honey has been brought in, or when a cold wind threatens to chill the brood, and smaller at other times.

This was my first visit from a well-known apiarist, and agreeable accordingly. A genius in his way, and a very genial man, is Detwiler. Since he used to come out and poke up my ideas with a pole he has been west and taught the western bee how to shoot, been to Florida and taught the sub-tropical bee how to shoot, then back to Toledo again. For giving the pot a steady boil, collecting the rents on a big estate (of which he is one of the prospective heirs, I believe) seems to be a trifle better than bees. [The charms of Florida were too alluring for John's make-up, and her sunny skies are *once more* over his head.—Ed.]

The queen cage made of a half built section of honey is just the tip top thing to keep the queen of a dwindled out colony, and a few hundred of her bees, until you can find use for her. They do not worry and make an interesting mantel ornament.

Bee-Keepers' Review.

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W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN, APRIL 10, 1892.

JENNIE ATCHLEY asks: "Why do we seldom, if ever, find a drone-laying queen when natural swarming is practiced?"

S. F. & I. Trego write: "Now, see here, why not drop the ads. and give us those short editorials? Well, joking aside, the editorials are the best part of the REVIEW."

OF THE FIRMS that manufacture and deal in beekeepers' supplies, there are probably none in the West that are coming to the front more rapidly than R. B. Leahy & Co., of Higginsville, Mo.

"Who has any bees for sale?" This is the inquiry that comes to me almost every day—certainly more than once a week. If any of the readers of the REVIEW have bees for sale, now is the time to advertise them.

JOSHUA BULL WRITES: "It is a unique idea that you have caught; that of placing the portrait of each correspondent at the head of his article. It seems as though we understand better what we read if we know how the writer looks."

THE CHARACTERISTICS of a bee may be determined by simply examining its color and markings—so says Mr. W. S. Vandruff in the *Api*. He does not give his description of an ideal bee, but says that he may do so some future time.

WAXING SECTIONS on the inside to secure the capping of the combs clear to the edge, was advocated, years ago, by D. A. Jones. At least, so writes G. K. Hubbard, and he asks what has become of the idea. Is it a "lost art," or is it worthless?

The REVIEW for Jan. 1889, is now all sold. Until further notice, I will pay 12 cents each for copies of this issue and sell them at 20 cts.

BEE-PARALYSIS is becoming so common of late that it threatens to be quite a serious affair. From quite a number of sources comes the report that common salt is a specific remedy. Ernest Root says that in the home yard, where the grass was kept down with salt, no cases appeared, while in the out yard, where no salt was used, there were two cases. I have almost always kept the grass down with salt in front of my hives, and have never had a case in my apiary.

BRO. NEWMAN has suffered so severely from *La Grippe* and over-work that he has been obliged to take a vacation. While he is away the editorial work will devolve upon Mr. G. W. York who has been for years a valued assistant in the *Journal's* office. I have the pleasure of a close, personal acquaintance and friendship with Mr. York and I know of no one better fitted to fill Mr. Newman's place while he is away resting those tired nerves. May he come back refreshed in mind and body is the wish of all.

THE SPECIAL TOPIC feature has been crowded out of this issue. As the years go by, I become more and more convinced of the folly of an editor committing himself to a certain course. Quite a number of articles of a miscellaneous character have been accumulating, and I have been promising the writers that their communications should appear in the *next* issue, until their patience will soon cease to be a virtue. Although there are plenty of articles on hand, some of them solicited at that, devoted to the special topic announced for this month, I think best to clear up the miscellaneous matter before attempting to make another special number. Perhaps some will think that I might better have made a special number of *this* issue after having so announced. The difficulty was that there was so much other matter that it seemed *must* go in this issue, that justice could not be done to the special topic. I tell you friends that it sometimes requires a "mighty deal of nice consideration" on the part of an editor to decide exactly what is best to do; and even then his judgement may be at fault. Editors are not infallible.

THE IDEA is now advanced that there is a connection between hard winters and good honey seasons. We have certainly had light winters and poor honey seasons. I can remember that when we used to have a hard winter that would kill off all the bees, the next honey season would be sure to be a good one.

EXTRACTING HONEY without taking combs from the hives, was rather jokingly discussed in the exhibition room at the Albany convention. Since then the matter has been mentioned once or twice in *Gleanings*. The idea is to have shallow supers of fixed frames, and either uncap the combs with some sort of an uncapping machine, or else extract the honey before it is sealed, evaporating it artificially after it is extracted. The extractor will have to be arranged on the radial plan—that is, with the combs arranged like the spokes of a wheel, instead of with the faces turned out. Of course all this looks very visionary—but who knows?

DR. MILLER, in "Stray Straws," quotes the editor of the REVIEW as saying, when speaking of the mysteries of the hive, that, "having in a large degree mastered these, there is little need in practical bee keeping to handle combs." The Doctor then says "If W. Z. is right, we can learn the mysteries from books, and keep box hives." Doctor, you are wrong. We can't learn bee-keeping from books any more than a man can learn to be a physician from studying books. He will have an apprenticeship to serve in the dissecting room, and it is the same with the bee-keeper, he, too, must dissect "subjects" in the bee yard before he can diagnose a "case."

WITHDRAWN FROM THE NORTH AMERICAN.

The Ontario Bee-Keepers' Association has withdrawn its affiliation with the North American Society. This action was taken because the North American has been incorporated in this country. As I understand the matter, the Society could not be incorporated in both countries. There was a choice to be made from necessity, if the Society was to be incorporated, and, as a majority of the members are residents of the U. S., it seems appropriate that it should be incorporated in this country. If any advantages are to come from incorporation, and I must confess my ignorance upon that score, then minor

considerations should give way to the general good. The Society will be International in its character just the same as it has always been.

Of late there have been some rather sharp discussions in the journals regarding this matter. It is a pity that the discussions could not have been allowed *before* incorporation was effected. The discussions might not have been so *caustic*, and it is possible that it would have been voted *not to incorporate*.

THE SUGAR-HONEY DISCUSSION.

I was not surprised that the views of Mr. Hasty should meet with opposition—I expected that he would be obliged to carry his end of the argument all alone—hence I am surprised that a fair share of those who write do so in his *defense*.

Before this discussion goes any further (if it *does* go any further) I wish to say that I consider it wholly unnecessary to allow the bees to bring in the syrup from the outside of the hive. I will not take space now to give the whys and wherefores, but I think that exactly as good results may be obtained from feeding inside the hive.

The point with some seems to be "will it pay?" Of course, unless the work can be done at profit, it is folly to discuss the matter. I have "fed back" thousands of lbs. of extracted honey at a profit. A syrup of granulated sugar costs not more than half as much as honey, then why should it not be fed at a profit? Right here, however, comes in a point. It might be profitable to me and not so to some one inexperienced. "Feeding back" is as much of a trade as that of queen rearing, and the ins and outs must be learned before it can be pursued at a profit.

There is such a thing as "fighting fire with fire," and there *may* be such a thing as fighting cheap sugar with cheap sugar as a weapon. To do this it will not always be necessary to change it into comb honey. Simply let the management be such that the end of the season will find the brood nests with a scanty supply of honey, then feed sugar for winter stores. The sugar is certainly as safe as honey for winter stores, and it may now be substituted for honey at a profit.

The REVIEW aims to be practical. It endeavors to bring out those points that may be of some *real* benefit to beekeepers. Now if this discussion is not likely to end in

some practical good, why continue it? But instead of saying that it has gone just far enough and must cease, I am going to do as I have done to my profit several times in the past, ask the advice of my readers. Let each who has the prosperity of the REVIEW and of beekeepers at heart write me his views upon this question—not necessarily for publication, but that I may have the advantage of the wisdom that comes from a multitude of counselors.

EXTRACTED.

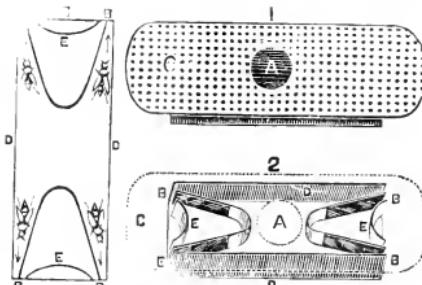
The "Lightning" Bee Escape.

It is a little early in the season to begin to talk about bee escapes, but the time when they will be needed will slip around after awhile, and when it does come it will be well to know where to get the best. In the A. B. J. I find a description of an escape called the "Lightning," manufactured by M. E. Hasting, New York Mills, N. Y. It embodies the Porter, spring principle, but has four exits instead of one, as in the Porter, hence the name, I presume. Here is the description as given in the A. B. J.

"The engraving below is a sectional picture of the 'lightning' bee escape.

Fig. 1 shows the escape complete, ready for the board. C is the perforated top, which allows free ventilation from the hive to the supers. A is the top opening which the bees enter upon leaving the supers.

Fig. 2 shows the escape with the top removed. A is an outline of the top entrance.



B, B, B, B, are the outlets from the escape to the hive. C is an outline of the top plate. D, D are side walls, and E, E are circular end walls.

The ground plan shows the bees passing out through the four passages toward B, each bee pushing against the spring as it passes out. It is impossible for them to return, there being only space enough for a drone to leave between the ends of E, E and the side walls, D, D; and the springs hang

in the center between the above mentioned walls.

By simply placing a suitable board, with a bee-space top and bottom, having an escape in the center, between the supers and the hive, the escape will do the work that was most dreaded—that of harvesting the surplus honey, with neither the taint of smoke nor the capping injured, leaving the honey in perfect condition for market.

It will clean the supers in from 2 to 4 hours. One super containing 27 one-pound sections was cleared of every bee in 1 hour and 43 minutes."

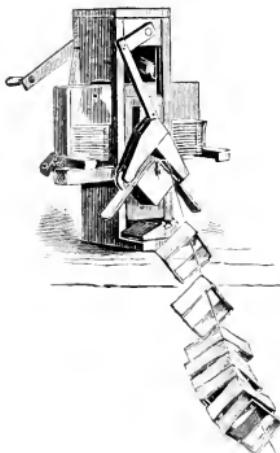
Sections Folded, the Joints Glued and Pressed

Together at the rate of 30 a Minute, by

Simply Turning a Crank.

I believe the inventive genius of beekeepers equals that of any class of men. A machine has lately been invented by E. W. Philo, of Haif Moon, N. Y., which enables the operator to put together sections, at the rate of 30 per minute, by simply turning a crank. In *Gleanings* for April 1st I find the following illustration and description of the machine.

"For quite a number of years, perhaps ten or more, I have felt the need of a machine for doing more rapid work in putting together sections and gluing their joints. During this time I have made several devices for accomplishing this work, but have never been fully satisfied with any of them until I had completed and thoroughly tested the one now placed before you in the accompanying engraving.



Although I have made two other machines that would do the work, they were too expensive to come into general use. My aim during the past year has been to produce a machine that would perform the *whole operation*, without any hand work except filling

the machine with unfolded sections and then turning the crank.

Every man, woman and child knows how to turn a crank, and when that is done, at a moderate rate, out come the sections—thirty per minute—all glued, folded and pressed together. To give an idea of the amount of power required, my boy, Ernest R., four years old, can work the machine nicely.

When the crank is raised to the highest point, the slanting board at the back of the machine is pushed in and there are two little horizontal sticks fastened to the end of the board that push the bottom one of the pile of sections out over the folding-block. The folding-block then comes down, folding the first joint, as seen in the cut. The upper part of the little claws then comes down on top of the section, causing the lower ends to turn in and come together. The section, folding-block and all (held up by a spring) are now forced down until the ends of the section are forced completely together in the V groove below.

The two little blocks in the V groove are to guide the ends of the sections so that they will come together right and go together easily. While the section is being pressed together, the gluer comes up out of the glue and puts some glue in the V grooves and on the ends of the section where it is dovetailed.

E. W. PHILO."

Where the Money is in Alsike Clover, and How to Get It Out.

I have often heard Mr. West and his daughter speak of the wonderful success attending the efforts of Mr. McColl in raising alsike clover. The gentleman lives only a short distance south of this city, and I have several times "threatened" to go out and interview him for the benefit of my readers, but Miss West has forestalled me and sent the "interview" to *Gleanings*, and I consider it of so much value that I give it entire. There is no question but what, where the soil is suitable for raising alsike, that the production of seed, honey and hay may be profitably combined.

The value of alsike to the bee keeper makes it worth his while to extend its culture in every way possible. In inducing his farmer neighbors to grow it he not only benefits himself but also his neighbors as well. Few appreciate its value. Rightly managed it may be made to yield three products—honey, hay and seed, which, in a little more than a year, are equal in value to the land on which it grows.

With suitable soil, and in competent hands, ten bushels of seed to the acre is a possible yield, which, at the present prices, \$7.50 to \$9.00, will purchase an acre of good farming land almost anywhere. There are, besides, the hay and honey.

When the cultivation of alsike is recommended to farmers, one or more of the following objections are usually offered: 1. It

does not germinate well; 2. It does not produce a paying crop of seed; 3. It does not produce as much hay as red clover; 4. The hay is of inferior quality. If fed to milch cows, the butter produced is white.

In the first case, either the seed was poor or the ground was not in proper condition. A sample of seed should be tested before purchasing.

In the second case, a short crop of seed is generally due to a lack of judgment as to the right time for cutting, and to improper handling afterward.

In answer to the third objection, it may be stated that, though the yield of hay may not be as great, the value of the whole product is greater.

Finally, the hay is better than red-clover hay, the stems being less woody, and devoid of the fine hairs which render red clover hay "dusty." In this market, timothy mixed with alsike is beginning to be rated No. 1, while timothy mixed with red clover is No. 2. As to its effect upon butter, a few roots, carrots or the like, fed to cows will remedy that. Often failure is the result of making a trial on so small a scale that the crop is neglected; then the grower thinks, of course, it is "no good."

A neighbor, Mr. McColl, has given to the alsike-clover plant the same kind of intelligent and careful study that Mr. Terry has given to the potato, with equally satisfactory financial results. Mr. McColl is too busy "compelling success" to write of his methods for the benefit of others; so, believing that they would be interesting and profitable to many, I interviewed him one evening. The following are the facts brought out:

Mr. McColl raises alsike for the seed, so his methods accord with his aim.

The most suitable soil is a clay loam, with a good proportion of the vegetable matter; but it may be grown on almost any kind of land.

The land having been deeply plowed and thoroughly pulverized the previous autumn, and sown to wheat, is harrowed in the spring with a fine-toothed harrow—an operation greatly benefiting the growing wheat. The clover seed is then sown at the rate of eight to ten pounds to the acre. A lighter seeding is often recommended, but Mr. M. believes that better results on the whole are obtained by a more generous seeding. The sowing should be done as early as possible, so that the seed may catch some of the spring rains. Here, the first of April is about right. It is important that the seeding be even. Bare spaces certainly lessen the crop, while over-crowded ones do not increase it. It is by attention to small details that success is won in this as in any other undertaking. If the seeding is done by hand, mixing the seed *thoroughly* with several times its bulk of sand may aid in its even distribution.

The seed may be sown with oats, if preferred, provided the ground can be put into proper condition early enough.

Soon after the removal of the wheat from the ground, the young clover-plants should cover it. They often make such growth as to blossom and mature seed the first season. Possibly, by sowing the seed alone, and

under the most favorable conditions, a fair crop of seed might be obtained the first season; but the second season is the one depended upon for the main crop, under ordinary circumstances. In the autumn and early spring the field may be lightly pastured, preferably by sheep, but care should be taken to remove the stock before damage is done. By early June the clover-field should be a sheet of vivid green, with no earth visible. Later, the pink and white blossoms appear, borne at the ends of the main stalk and branches. This is the bloom which will furnish the largest and best part of the seed crop. Keep watch of them, for they soon disappear under a set of somewhat smaller blossoms, which in turn give way to another, the bloom continuing several weeks. During this time the bee does double duty in improving the yield of seed by cross-fertilization and in gathering the nectar with which the florets are abundantly stored. Mr. M., realizing the value of its labors, purchased ten colonies, and feels that they paid for themselves in the first season by increasing the yield of clover seed, to say nothing of their gathering 300 lbs. of the finest honey in the world. Had he been an experienced bee keeper, instead of the beginner that he was, the honey crop would have been twice as great. A week or more of bloom passed before the boxes were put on at all.

To go back to those first clover-blossoms—they will have become a rich brown in color, and *nearly* dry. Now is the time to cut it. Just here is where a day's delay means partial if not total failure. Waiting for the later and inferior heads to ripen, the earlier and more valuable ones, becoming *entirely* dry, burst their pods and scatter the seed upon the ground. When cut at the proper stage, a large part of the foliage is green and tender, and, with the immature heads, furnishes a hay equal if not superior to that from the first growth of red clover.

After it is cut, moisture does not injure alike as readily as it does other hay. To avoid scattering the seed, the hay should be handled as little as possible during the curing, and then only when there is moisture enough in the atmosphere to keep the stems pliable—never in the heat of the day. This is the second point of extreme importance. Drawing should be done during the earlier part of the day, after the dew is off, and again in the afternoon. Subsequent operations need no comment until the seed is ready for the cleaning process. In order to command the highest price in the market, the seed must be perfectly clean; but as it is so much smaller than any other seed which the farmer handles, the fanning-mill requires finer screens than those ordinarily used, and the blast controlled so that seed is not blown off in the chaff. Though it requires skill and a good machine to perfectly clean seed without waste, care and ingenuity will often accomplish the desired result with slight expense, and add many dollars to the value of the crop.

The first seeding may be allowed to remain on the ground during the third and fourth seasons, and possibly fair crops may be had; but, on the whole, it is probably better to

turn it under after the first cutting, and use the ground for some other crop—potatoes for instance.

The past season was an exceedingly poor one for clover in this locality; but alike yielded double the amount of seed obtained from red clover when the latter was worth the cutting. Many did not cut it at all.

EMILY E. WEST.

FLINT, Mich., Feb. 15, 1892."

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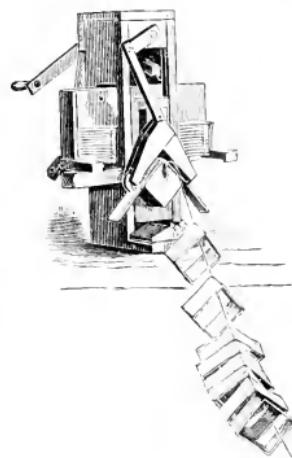
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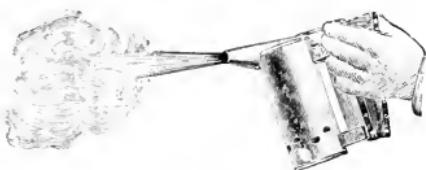
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Send for Circular before ordering elsewhere.
1-92-12t. WM. H. BRIGHT, Mazeppa, Minn.

Prints. - Review.

SOLID GOLD

He sat in his apiary at noonday,
He was lonely, gloomy and sad;
The bees were buzzing about him,
And he was hopping mad.
Not an ounce of surplus honey,
Not a dime in his pocket for bread,
But the black bees kept on buzzing
About the old man's head.
At last, in despair, he shouted:
"I would 'hat I were dead!"
Then came the sound of sweet music -
He stood as one in a trance -
The birds sang

"BUY THE W. V. M. ITALIANS."

And then of joy you'll dance." 2-92-12t
Virgin queens, 40 cts. each. Untested, \$1.00; tested, \$2.00; select tested, \$2.00; select breeding queen, \$4.00. Untested queens ready May 20. W. V. MOREHOUSE, LAFAYETTE, IND.

Italian Queens

And BEES by the POUND. The finest honey gatherers in the land. Tested queens, \$1.50 each; select tested, \$2.00; untested, \$1.00, each, or \$9.00 a doz. Queens ready to ship now. Satisfaction and safe arrival guaranteed. Give me an order and see what nice queens you will get.

4-92-6t J. W. TAYLOR, Ozan, Ark.



Hunt's Foundation

Is a superior article. Warranted good as any ever made. Dealers and others write for samples and prices. Sections and Dovetailed Hives in any quantity. Free price list of everything needed in the apiary. **M. H. HUNT, Bell Branch, Mich.**

2-92-ft *Please mention the Review.*

(Near Detroit.)

Italian ~ Queens.

6 Warranted Queens, \$5.00.
Send - for - Circular.

J. T. WILSON,
4-91-tf Pink, Kentucky.

It's Got the SNAP.

That is what our subscribers say, and they are coming in by every mail. Send 50 cents for a year's subscription to the **Missouri Bee-keeper.** Monthly; 16 pages and cover; nicely printed on good paper. Money returned if you don't like it. Sample free.

Address BEE KEEPER PUB. CO.,
Unionville, Mo.

1892. 1892. 1892. 1892.

In 1892 **LEININGER BRO'S** are going to devote their entire time to raising

5-BANDED

Golden Red Clover Bees.

For further particulars write for our descriptive Catalogue, which will be ready about January 15th, 1892.

LEININGER BRO'S,
12-91-tf Fort Jennings, Ohio.

Reduced RATES: 1892. COLONIES, TERMS for NUCLEI AND QUEENS.
3-92-2t **S. D. MCLEAN,**
Box 490, Columbia, Tenn.

On Their Own Merits!

Those who have had queens from me say my

5-Banded Golden Italians

Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. **None but the very best Queens sent out;** large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00, 6 for \$5.00. Special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.

CHAS. D. DUVAL,
Spencerville, Mont. Co., Md. 12-91-tf

Please mention the Review.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

- If you are going to -

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

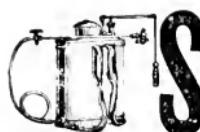
Early Queens from the South.

Beautiful Yellow, Tested and Untested Queens; also 2 and 3-frame Nuclei.

Prices for	April	May	June
One untested queen,	\$1.00	\$1.00	75
Three " "	2.75	2.50	2.00
One tested "	2.00	1.50	1.50
Three " "	5.00	4.00	4.00

Very best, select tested queens, for breeding, \$3.00 each. Two-frame nucleus, with any queen, \$1.50 extra. Safe arrival guaranteed.

3-92-2t **W. J. ELLISON, Catchall, S. C.**



SPRAY YOUR FRUIT TREES AND VINES

Wormy Fruit and Leaf Blight of Apples, Pears, Cherries, Grapes and Potato Rot, Plum Curculia prevented by using **EXCELSIOR SPRAYING OUTFITS**.
PERFECT FRUIT ALWAYS SELLS AT GOOD PRICES. Catalogue showing all injurious insects to Fruits mailed free. Large stock of Fruit Trees, Vines, and Berry Plants at **Bottom Prices.** Address W. E. STAUFF, Quincy, Ill.

JENNIE ATCHLEY HAS MOVED.

In order to get farther out on the prairie I shall change my post office from Farmerville to Floyd. I am preparing to run my entire apiaries for queen rearing. In order to have the use of my four-frame nuclei early in the season I offer fine, tested, Italian queens in March and April at \$1.25 each. A few fine breeding queens at \$5.00 each. I have some of the finest breeders in the United States, both of the five and three-banded varieties; kept and reared in separate yards. Untested queens in March, April and May, either variety \$1.00 each; six for \$5.00; twelve for \$8.00. June and after, 75 cts. each; six for \$4.00; twelve for \$7.50. Orders may be booked now and the pay sent when the queens are ready. Special price to dealers who take a certain number of queens per week. My money order office will be Greenville, Texas. Safe arrival guaranteed on all queens. 12-91-tf

JENNIE ATCHLEY, Floyd, Texas.

Please mention the Review.

Bees, Hives, Sections, Smokers, Foundation, Extractors, Shipping Cases, Etc., are sold by J. C. SAYLES, Hartford, Wis. Send for Price List. 2-92-tf

Please mention the Review.



KEYSTONE

APIARY.

Queens in June; in July.	
Select,	\$3.50
Tested,	2.50
File,	1.50
6 "	8.00
Send for Circular.	

W. J. ROW,
Greensburg, Pa.
12-91-7t *Mention the Review*

A Field Clear

Of other races is where I breed the 5 and 3-banded **Golden Italians.** Untested queens in Apr. and May, \$1.00; six for \$5.00. Tested, \$1.75; three for \$4.50. Select, tested, three banded, \$2.50; five-banded, \$3.00. Two-frame nucleus with tested queen, \$5.00. Four-frame nucleus with tested queen, \$1.00. I can also furnish the eggs of fancy poultry. 4-92-tf

A. SIDLER, Thayer, Mo.

Best Honey Gatherers.

Those gray Carniolans beat them all in gathering honey. For instance, here is a report of one of our apiaries, of 50 colonies, for 1891. Honey crop, 7,000 lbs.; yield of best colony, 230 lbs.; natural increase, 15 swarms. No other race of bees ever allowed such a report in this locality. Give them a trial and they will convince you of their superiority. They winter remarkably well and are exceedingly gentle and hardy. Descriptive circular and price list free.

F. A. LOCKHART & CO.,

4-92-tf

Lake George, N. Y.

Please mention the Review.

Bee Hives and Section Boxes.

Simplicity, Langstroth Simplicity, Standard Langstroth, Dovetailed and Champion Chaff Hives, Supers, One Piece Sections and Shipping Cases, Foundation, Smokers, etc., etc. Send for 16 page Circular.

1-92-tf PAGE & KEITH, New London, Wis.

SECTIONS, SECTIONS, SECTIONS,

Foundation, Foundation, Foundation,
SMOKERS, SMOKERS, SMOKERS,

and **ALL** other supplies. Send for catalogue.

J. STAUFFER & SONS, Nappanee, Ind.

12-91-9t

Please mention the Review.

Cheap Freight and Quick Transportation.

Being located at the most central point of railroad and express companies enables us to furnish bee keepers with supplies at less cost to themselves than any house in the country. We furnish everything needed in the apiary, as low as the lowest and as good as the best.

COOK'S COMPLETE HIVE combines all the most approved methods of hive making. It is a complete arrangement for out-door wintering and is equally well adapted to producing comb or extracted honey. Send for illustrated circular and price list.

J. H. M. COOK, (SUCCESSION TO KING & ASPINWALL) 78 Barclay St., New York City.

BEGINNERS IN BEEKEEPING

Will find our **OUR NEW, LARGE, ILLUSTRATED CATALOGUE** and **PRICE LIST** for 1892 the **Most Complete** and easiest to understand; the prices, too, are **VERY LOW**. We make all styles of **HIVES, SECTIONS, FRAMES, ETC.**, with the greatest accuracy. Our goods are guaranteed to be the very best. If you need any supplies, write to us.

THE W. T. FALGONER Mfg. Co., Jamestown, N. Y.

Also publishers of **THE AMERICAN BEE - KEEPER**, a 24 - page monthly for beginners, (50 cts. a year). Sample copy free.

Please mention the Review.

2-92-3

A Good Type Writer CHEAP.

For the past three months I have been using on Odell type writer. It is the best, low priced machine with which I am acquainted. Its work is the equal of that done by any type writer. I doubt if so great speed can be attained as is the case with the key'd machines, but I can write more rapidly and easily than I can with a pen, and I presume that those receiving my letters can read them with greater ease and certainty. The machine is simple, easy to learn and not likely to get out of order. There are two styles, one costing \$15.00, and the other \$20.00. The Odell Co. has asked me to take the agency for the sale of the machines, and I shall be glad to send specimens of writing and illustrated, descriptive circular to any one thinking of buying a type writer. W. Z. HUTCHINSON, Flint, Mich.

Good QUEENS Cheap

After the 20th of April I shall have 30 tested Italian queens that I will sell at \$1.25 each, or \$12.00 a doz. After May 1st I shall be ready to mail untested queens at \$1.00 or \$10.00 a doz. My queens are reared from one of A. I. Root's best, imported queens, or from selected home bred stock.

4-92-1t

W. A. COMPTON,
Lynnville, Tenn.

GOLDEN ITALIAN QUEENS.

My apiary is located on the broad prairie, 3 miles from other bees; hence, not one queen in 100 will be mated. Unested in April and May, 75 c's. each; two for \$1.25. After June 1st, 65 cts. each, or two for \$1.00. Bees, 50 cts. a lb.

C. B. BANKSTON & CO.,
4-92-1t

Thorndale, Texas.

1852.

REDUCTION ON THE PRICE OF

1891.

Langstroth on the Honey Bee.

(REVISED.)

PRICE BY MAIL, \$1.40: BY EXPRESS OR FREIGHT WITH OTHER GOODS \$1.25.

By its copious indexes, by its arrangement in numbered paragraphs, including reference numbers on any question in bee culture, any information can be instantly found. This book is the most complete treatise on bee-keeping yet published. A FRENCH EDITION JUST ISSUED.

1876. DADANT'S COMB FOUNDATION. 1891.

More than Ever. Better than Ever. Wholesale and Retail.

Half a Million lbs. Sold in 13 Years.

Over \$200,000 in Value.

It is THE BEST, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year. Samples, Catalogue, Free to All. Send your Address.

We also make a specialty of Cotton and Silk Tulle of very best grade for bee-veils. We supply A. I. Root and others. 7,000 Yards just received. Prices Very Low. Samples Free.

Smokers, Honey Sections, Extractors, Tin Pails for Honey, Etc. Instructions to Beginner with Circulars Free.

4-92-12

Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

MAY, 10, 1892.

THE BEE-KEEPERS'
REVIEW
Published Monthly,

At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:—

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

CLUBBING LIST.

I will send the REVIEW with—		
Gleanings.....	(\$1.00).....	\$1.75.
American Bee Journal.....	1.00.....	1.75.
Canadian Bee Journal.....	.75.....	1.65.
American Bee Keeper.....	.50.....	1.40.
Missouri Bee Keeper.....	.50.....	1.40.
Bee Keepers' Guide.....	.50.....	1.40.
Apiculturist.....	.75.....	1.65.
Bee-Keepers' Magazine.....	.50.....	1.40.

For Simplicity and Durability
Bingham Patent Smokers,
 AND
BINGHAM & HETHERINGTON
Honey Knives,
 ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,.....	3½ inch,.....	\$2.00
Conqueror Smoker,.....	3 ".....	1.75
Large Smoker,.....	2½ ".....	1.50
Extra Smoker,.....	2 ".....	1.25
Plain Smoker,.....	2 ".....	1.00
Little Wonder Smoker, 1½ ".....	.....	65
Bingham & Hetherington Knife,.....	.....	1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINCHAM & HETHERINGTON,
 Abronia, Michigan

1-90-tf.



Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa., **One of the Largest Bee-Hive Factories** in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

Hives, Sections, Crates and Foundation.

All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue.

2-91-tf

OLIVER HOOVER & CO., RIVERSIDE, PA.

Please mention the Review.

Western BEE-KEEPERS' Supply Factory.

Largest Business of the kind in the West.

We manufacture Bee Keepers' supplies of all kinds, *best quality at lowest prices.* Dovetailed Hives, Sections, Foundation, Extractors, Smokers, Crates, Veils, Feeders, Clover Seeds, Buckwheat, etc. Imported Italian Queens, Queens and Bees. Sample Copy of our Bee Journal, "The Western Bee-keeper," and latest Catalogue mailed Free to Bee-Keepers. Address **JOSEPH NYSEWANDER, DES MOINES, IOWA.**

4-92-tf Please mention the Review.

BEESWAX,

Imported or Domestic, Crude or Refined. A Stock Constantly on Hand. Write us for Prices, Stating Quantity Wanted.

4-92-4t

ECKERMAN & WILL, SYRACUSE, N. Y.

It's a Mistake

Bee-Keepers make, in not replacing *old, worn out queens* with *young ones* early in the spring. This re-queening

PREVENTS SWARMING

and will double the yield of surplus. I breed the "leather back" strain of Italians, and make a *specialty of contract orders.*

11-92-tf **A. F. BROWN,**
 Agent So. Express Co. Huntington, Fla.

Please mention the Review.

ONE Punic queen and Am. Api. 1 yr. \$2.50
 Golden Carniolan " " " " 2.00
 Beautiful Italian " " " " 1.60
 Eight-page catalogue free. **H. ALLEY,**
 Wenham, Mass.

BEES 350 Colonies; 1,000,000 Sections; Hives, Smokers, Queens, Etc. Send for price list to E. T. FLANAGAN, Belleville, Ill. 12-91-6t

ADVANCED BEE-CULTURE;

Its Methods and Management.

This book is now "out" and ready for delivery. It contains 88 pages the same size as those of the REVIEW. It is bound with enameled paper tinted to resemble perforated zinc.

It begins with The Care of Bees in Winter, and then tells how they ought to be cared for in the spring in order to secure the workers in time for the harvest. Then Hives and their Characteristics, Honey Boards, Sections, Supers and Separators are discussed. The best methods of Arranging Hives and Buildings and Shading the Bees are described. Varieties of Bees, Introducing Queens and Planting for Honey are next given a chapter each. Then the Hiving of Bees, Increase, its Management and Control, and Con-

traction of the Brood Nest are duly considered; after which Comb Foundation, Foul Brood, Queen Rearing, the Raising of Good Extracted Honey, and "Feeding Back" are taken up. After the honey is raised, then its Preparation for the Market, and Marketing are discussed. Then Migratory Bee-keeping, Out - Apiaries and Apiarian Exhibits at Fairs are each given a chapter. After this comes the question of Wintering, which is discussed in all its phases. The influence of Food, Ventilation, Moisture, Temperature, Protection, etc., etc. are all touched upon. There are also chapters upon Specialty versus Mixed Bee-Keeping, Comforts and Conveniences in the Apiary, Mistakes in Bee-Keeping, etc., etc.—32 chapters in all.

PRICE of the Book is 50 cts. The REVIEW and the book for \$1.25.

Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price \$1.00. Mailed, postpaid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address ROWELL'S ADVERTISING BUREAU, 10 Spruce St., N. Y.

B YELLOW **E**XTRA **E**XCELLENT **S**
Italian queens Tested. \$1.50 Two - Frame
for sale in June. Unested, 1.00 nucleus with
at Chenango Order Early Queen. \$2.00.
Valley apiary Send for cir. Don't pass by
Mrs. OLIVER COLE, Sherburne, N. Y.
4-92-3t Please mention the Review.

FREE on Test Trial anywhere.
Any ORGAN or PIANO
On your own Terms
No pay before
you see and
TRY

CORNISH Organs! Pianos!

Send at once for our new
20 pp. Illust'd Cata-
logue. FREE to
any address

WASHINGTON, N. J.

Has Pleased Others, Will Please You.

UTILITY

Bee Hives, Feeders, Smokers and Foundation Fastener. Also other Apiarian Supplies. Circular and prices on application.

LOWRY JOHNSON,
MASON TOWN, PA.

ITALIAN QUEENS AND SUPPLIES FOR 1892.

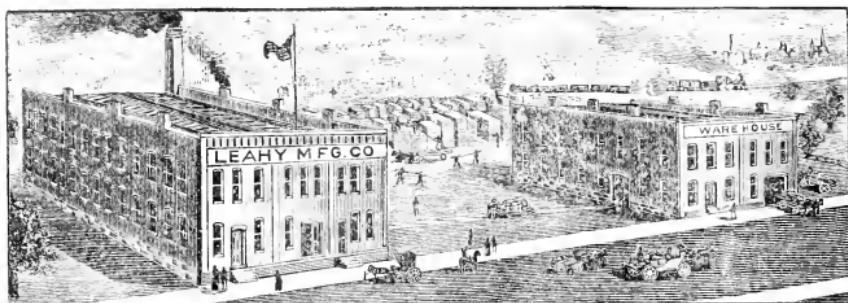
Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,
1-88-tf. Augusta, Georgia.

DO YOU KEEP BEES

If so, send your name and address for a Free Sample of the **AMERICAN BEE JOURNAL**. Weekly—32 pages—One Dollar a year.

THOMAS G. NEWMAN & SON,
PUBLISHERS
CHICAGO, ILL.



The above is a representation of our factory, built and equipped exclusively for the manufacture of *Apiarian Supplies*. We have in connection with our business a *lumber yard*, a *tin shop* and a *Printing Office*. All this enables us to manufacture and sell almost all kinds of goods very *cheap*. We have sold over *sixteen car loads* of supplies since Nov. 1, and of those contemplating buying either in *small* or *large quantities* we ask a *trial*. Remember we will not be *undersold* or *excelled in quality*. 24-page Catalogue free. Address 1-92-6t

MENTION REVIEW.

LEAHY M'F'G CO., Higginsville, Mo.

BEE SUPPLIES

RETAIL
AND
WHOLESALE

Ev rything used in the *Apairy*
Greatest variety and *arg st* stock in the
West. New catalog, 60 pages, free to bee-keepers.

Special Discount to Dealers.

1-92-6t E. KRETCHMER, Red Oak, Iowa.

Minnesota Ahead

Why? Because in consequence of her pine forests, lumber is cheap. That's why ERKEL sells hives cheaper than any one else. Only think! single-story hives, from 35 cts. up. Two-story hive, from 70 cts. up. Other supplies cheap. Send for catalog. 3-92-6t

F. E. ERKEL, Le Sueur, Minn.

ITALIAN

queens free with supplies.
Dovetailed hives, Root's
new pattern. Sections
and everything else cheap. Write for particulars
and save money. Catalogue free. 5-92-4t

A. F. McADAMS, COLUMBUS GROVE, OHIO.

Please mention the Review



3-92-6t

YOU'LL find our strain of **Golden** and **Leather**-colored Italian bees. Queens bred for business. **Tested**, in May, \$1.50; 3 for \$4. **Untested**, \$1; 3 for \$2.50. Nuclei and full colonies at special prices. Bee-Supplies of all kinds. Send for Circular giving full particulars.

JNO. NEBEL & SON,
High Hill, Mo.

ITALIAN QUEENS

Prices for May.

One untested queen, \$1.00
Three " queens, 2.50
One tested queen, 1.50
Three " queens, 4.00
Very best, select, tested queen, 3.00
Two - frame nucleus, with any queen, \$1.50 extra. Safe arrival guaranteed.

W. J. ELLISON,

3-92-3t

Catchall, S. C.

Only **\$5.00** will buy

One good, Simplicity, ten-frame hive with a good colony of Italian bees and a queen. \$4.00 will buy an eight frame hive, bees and queen. L. and Hoff. frames. Queens and nuclei in season. JNO. A. THORNTON, Lima, Ill. 5-62-6t Please mention the Review.

**PATENT WIRED, COMB FOUNDATION
HAS NO SAG IN BROOD FRAMES.**

THIN, FLAT BOTTOM FOUNDATION

HAS NO FISH BONE IN SURPLUS HONEY.

Being the cleanest is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),
3-90-6t Sprout Brook, Mont. Co., N.Y.



J. FORNCROOK & CO.



WILL FURNISH YOU THE

"BOSS" ONE-PIECE SECTION

AS CHEAP AS THE CHEAPEST

And the **BEST** in the Market.Also **DOVETAILED HIVES**
and other **SUPPLIES.**

Write for Price List.

WATERTOWN, Wis., Jan. 1, 1892. 12-91-12

Please mention the Review.

ITALIAN QUEENS.

If you want Italian queens, I have some untested ones ready to mail, at \$1.00 each or 6 for \$5.00. Tested queens, of last year's rearing at the same prices. After June 1st, I will sell untested queens at 75 cts. each or 6 for \$4.00; tested at 90cts. each or 6 for \$5.00. Queens are reared from imported or select stock. 4-92-21

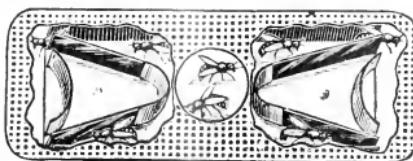
W. A. COMPTON, Lynnvile, Tenn.

Please mention the Review.

1892.

Don't you want large, beautiful Queens, producing Bees that will just please you fully? Well, my Italians are in the lead—so my customers say. 1,048 queens sold and have heard of only two misnamed. Orders booked now and will be filled in rotation. 10 per cent off on all cash orders received during January. Warranted Queen \$1.00; 6 for \$4.50. A select Breeding Queen, yellow to the tip, \$2.00. Will begin shipping May 1st. 1-92-1f

W. H. LAWS, Lavaea, Ark.

HASTINGS, "Lightning" BEE ESCAPE.

Send for a sample of Hastings, "lightning" Bee Escape and you will be convinced that it is the best and most practical escape yet produced. It will clear the supers in a short space of time—from 2 to 4 hours—and it is impossible for it to become clogged, as the bees cannot return. Each escape is accompanied by directions and guaranteed to do as represented. 20 cts. each by mail; per doz. 2.25. Electros, furnished free to dealers for use in their catalogues. Write for discounts. **M. E. HASTINGS.**
4-92-6t New York Mills, N. Y.

Take Notice!

If you are looking for the bees that give the most profit, and are the most gentle, try the

ALBINO.

I can also furnish the golden Italian, but my preference is the Albino. Send for circular and price list and see what others say of them and how cheaply I sell them. I also manufacture and deal in **Hives, Sections, Foundations, Extractors** and other aparian supplies. **S. VALENTINE.**
5-92-1t Hagerstown, Md.



My Catalogue of Aparian Supplies is free; my Pamphlet, "How I Produce Comb Honey," Costs Five cts. **Geo. E. Hilton,** Fremont, Mich. 12-91-6t

 OF THE
SECOND HAND SUPPLIES

That I have been advertising in the REVIEW, the following remain unsold. 100 old-style, Heddon surplus cases at 20 cts. each; (as a non-separatoed case this has no superior) 50 slatted honey boards at 10 cts.; 40 "dummies" for contracting the brood nest, at 3 cts.; 20 Heddon feeders at 40 cts.; young America lawn mower, \$2.00. All of these articles have been well cared for and are practically as good as new.

I also have 2,000 new four-piece, white poplar sections at \$4.00; 50 lbs. of brood foundation, Cary's make, extra fine, at 45 cts. and a new, Stanley, Automatic honey extractor, two baskets, and each basket will take two Heddon frames or one each of the Langstroth, American or the Quinby, price \$12.00.

I would sell any of these articles for cash, or I would exchange them for extracted honey or for young, laying, Italian queens.

W. Z. HUTCHINSON, Flint Mich.

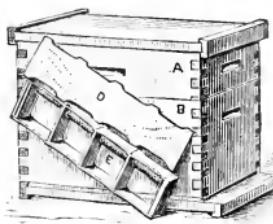
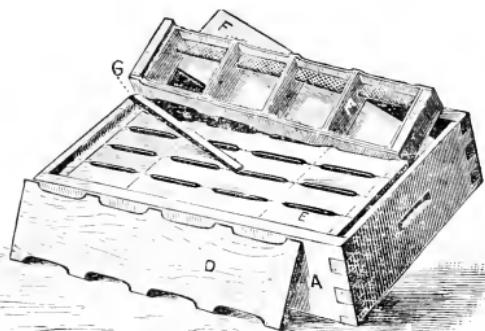
Who said there was fun in SCRAPING SECTIONS,

spoiling clothes and gushing into honey? You won't have much of it to do if you use the right kind of a surplus device. Our Dovetailed Super

SECTION HOLDER

Arrangement saves scraping. Our wood separators are cut $4\frac{1}{2}$ in. wide and then slotted out. They are wide enough to cover the upright edges of the sections. By a follower and wedge all cracks are closed; and the result is that no propolis is chinked in. No amount of squeezing can close up the cracks left by the old, narrow, wood separator.

Our super permits of reversing, also of changing the outside rows of sections to the center with but very little labor or trouble.



Our Dovetailed Hive is equipped not only with the above surplus arrangement, but has several other "comforts" besides; such as self-spacing Hoffman frames, division board and new, improved, tin rabbets. Our Dovetailed Hive is carrying everything before it. If you buy of us or our agents you get all the very latest improvements.

Send for our 52 page, Illustrated Catalogue of Bee Keepers' Supplies and a sample copy of our unique, *Gleanings in Bee Culture*. Sent free for your name on a postal.

A. I. ROOT, Medina, Ohio.

Mention Review.

QUEENS, DRONES, NUCLEI.

We are sending them PROMPTLY by mail and express and guarantee safe arrival ANYWHERE in the U. S. Two-frame nucleus with queen, \$2.25. 5-92-2t

Root's Dovetailed Hive,

Smokers, Foundation, etc. Send for price list. Italian queens, selected, tested breeders, \$4. 0; tested, \$2.00 or three for \$5.00; untested, \$1.00; six for \$5.00 or \$3.00 per doz. Make money orders payable at Clifton. COLWICK & COLWICK, Morse, Tex.

YOU
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A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V.

FLINT, MICHIGAN, MAY 10, 1892.

NO. 5.

How to Get Plenty of Bees and Make Them Work in the Sections Without Swarming.

R. C. AIKIN.



I HAVE previously told you how to get the bees; now the question is how to get them down to business and hold them there. If we have been successful in getting the bees, some colonies will be so full of workers that they can't all

find loafing room inside, and have to "camp out." Some will begin to prepare for swarming, perhaps. Such strong colonies should have more room: so I put an empty brood chamber underneath the old one. This is to keep the bees cool, and discourage any notion of swarming.

The time now is about June 5 or 10, I watch the honey flow, and anticipate as nearly as possible when the flow will begin; but I keep getting bees, and if possible have every comb in each colony full of brood; when full of brood, certainly but little honey is there. It is the calm just preceding the storm. Much care is now needed, care that

no colony comes to starvation. If one does, it will never fully recover. At the end of the season, its credit column will be less than one that was its inferior a few days before. Care, that the swarming fever does not attack them. Care, that in some other way the bees do not get the start of their keeper.

If the flow is expected to begin June 15, about June 8 or 10, I put a super on each colony. They loaf in it, and get used to it as a part of their home. I now have everything ready, supers are fitted up ready to set in the hives. The hives are overflowing with bees, and the combs full of brood.

Just a word now about the internal arrangement of supers. If I have any unfinished sections carried over, they should have been extracted and dried last fall. If I have such, I put a few in each super, of the supers first put on, say two in each corner; 8 in all. There may be more or less, according to the supply. They should always be so arranged that a section with foundation or starters does not join them, without a separator between.

As for separators, I use two in each super of 28 sections arranged as follows: First, two rows of sections, then a separator, then three rows of sections, next a separator then two rows of sections. Thus the central row has no separator next to it, but 24 of the 28 sections have one straight side.

As to whether starters or full sheets should be used in sections, I am undecided.

One thing I know, full sheets leave too much wax in the honey for me. I know too, that nice honey can be produced, and well fastened to the sections, by using two starters, one top and one bottom, *à la* Dr. Miller, and as for quantity, I think just as much, and I have produced tons of honey both ways.

When honey begins to come in I must immediately remove those empty chambers from under each hive, else the bees will at once begin to fill them, and mostly with drone comb too. Just about now, the bees seem to have increased wonderfully in numbers. The increased activity and consequent heat, and need of elbow room, together with the filling up of empty cells, ~~tend~~ to make a colony seem to be from $\frac{1}{3}$ to $\frac{1}{2}$ stronger than it was two or three days before, so instead of one super, from two to four will be necessary to keep the colony at work.

Thus far we have succeeded in our plans, *got bees* and had no swarming; now we have the bees at work. An apiary in such a condition will, especially if the honey flow comes suddenly, prepare *en masse* for swarming; and within eight or ten days, eight out of ten colonies would have swarmed, and fully 95 per cent of the whole would swarm. Just as soon as the flow begins, while removing the empty chambers from underneath. I also hunt out each queen and take with her enough bees and one comb of hatching bees to make a nucleus colony. I then clip out every queen cell that may be started in the old colony. It won't do to *miss one*, even if it is necessary to shake all the bees from every comb. I put an empty comb in place of the one taken with the queen; or what is better, if I have any weak colonies that will not pay to run for honey, borrow a comb of brood from them to fill the vacancy. If the colony needs more super room, I add the supers now.

Each queen, and accompanying brood, and bees, are put into a brood chamber, and built up to a full colony, by adding empty frames, full sheets of foundation or full combs. By close spacing and using some drone combs next to them, I can get very nice combs in empty frames for starters. These nucleus colonies build up quite rapidly. The stimulus of the honey-flow, the room ahead to be filled, keep the queen and her few workers busy.

At the dequeening of each colony—both on the hive and in the book—I make a record like this, 6-20 x Q (June 20th, queen removed.) Make the full entry in the book, but on the hive it is only necessary to make it 20 x Q, I won't forget the month, but might the day. Now, so far as swarming is concerned, that colony is "fixed" for ten days.

You say this is lots of work. Yes, but is it more work than chasing swarms all the while? Suppose we had 300 colonies in three apiaries, if they swarm, we must have a man at each place, say ten days, and one man on the road hauling out supplies.

With an assistant, and a team, I can remove the queens from the 300 colonies, in three apiaries, in six days time at most, doing all other necessary work, such as adding supers. Each trip out will take a load of supers.

The queens once out, I continue to look after supers, ventilation, shading, etc. I now have almost the whole force gathering honey. Instead of having my stock divided (except those nuclei, which do not perceptibly lessen the working force of the old colonies,) each old colony goes right into "the honey business." If I have been reasonably successful thus far, each colony will occupy and work, 84 to 140 sections at one time, even in a very moderate flow, and what is better, they are filled more even and straight, completed in less time, and, of course, whiter. The heat of such colonies aids much in ripening honey and wax working.

If the flow is free, it won't be long until some supers are ready to come off. As I go about and look them over, those that are almost complete are raised to the top; and if more are needed, and the flow continues free, I put the empty ones at the bottom, but here we need to be very careful, and not "stretch" too fast, lest we have a lot of unfinished sections. Should the work go slow, and yet there seems need of more room, I put the empty supers on top. I watch closely the honey-flow, so as to know whether to "stretch" or "close down."

On very strong colonies little harm is done by adding a super at the top. If they need them they will go up and use them. If not, they will work the ones below.

Each of those old colonies now has a lot of queen cells built. In our next we will tell you what to do with them.

LOVELAND, Colo.

March 20, 1892.

Epilobium, or the Great Willow Herb.

J. H. LARRABEE.*



HIS plant has several times of late thrust itself upon the attention of the world of bee keepers for its value in certain localities as a honey plant. As the poor or indifferent good honey seasons go by it becomes

more and more evident that it is one of the vital problems of the industry to increase in some manner our honey yields. For this reason, plants of this character are receiving particular attention, with the purpose that, if the flower cannot be brought to the bee, the bee must be taken to the flower.

Epilobium angustifolium *Lium.*, or *E. spicatum* of other authors, is known under various common names, the best known of which is willow herb, fire weed, Indian pink, and rose bay. It belongs to the same botanical order as the *Fuchsia* and *Evening Primrose*. Nearly all of the order are aquatic or at least prefer marshy or wet soils.

Of the genus *Epilobium* there have been described some fifty species inhabiting America. A large majority of these are found only in British America and Alaska. Many extend down among the snows of the Rocky Mountains, as far south even as Arizona. There are only three or four species of *Epilobium* found at all commonly in the U. S. east of the Mississippi river. By far the most numerous of these is the *angustifolium*. The visits of insects assisted by the

habits of flowering have caused many of the species to intercross or hybridize.

The plant is an herb growing from two to six feet in height and may be easily identified by a study of the cut and by the following description. The leaves are arranged alternately on the stalk, are acutely lanceolate, paler beneath, and have lateral veins forming loops nearly parallel with the edge of the leaf. The stamens and style are bent downwards and the stigma is four lobed. The seeds are borne in pods about two inches in length, are very numerous, and have attached to them a coma or hairy filament. The color of the flower is a violet-blue.



EPILOBIUM.

In this species the stamens are ripe before the stigmas appear, that is, the male part of the flower comes to perfection and the pollen is disseminated before the female part has developed. However, the blossoming habits of the plants render ample cross fertilization sure by means of insect visits. The flowers open upon a raceme and the lower ones ripen seed while those above are in all stages of bloom to the bud. May not the fact that these insect visits are so necessary for its

*John H. Larrabee was born thirty years ago at Niles, Mich. He is the older of two sons of Mr. and Mrs. Wesley Larrabee, who for many years have resided in Shoreham, Vt. "Johnny" was a bright, scholarly boy, and having obtained a three years' academic course, followed by one year in the University of Vt. Having excellent qualifications he for two years took up successfully the arduous duties of school teaching; but, in 1884, began with the bees. In this business, too, it is hardly necessary to state that he has also met with pre-eminent success. Interesting articles from his pen have from time to time appeared in the leading journals of bee culture, and his strides in progress were rapid. "Rambler" gave him the title of "Genial John," which seems to his friends to be decidedly appropriate. A year ago he was asked by Prof. A. J. Cook, of Agricultural College, Mich., to assist in experiments in bee-culture under the Department of Agriculture, and this position he at present holds.

fertilization have given to it its richness in nectar? This idea embodies the essence of the universal principle of natural selection—the survival of the fittest.

The *E. augustifolium* is found all over the cooler portions of North America, from Labrador to Alaska and southward to Southern California, Illinois, and North Carolina. It is distinctly an inhabitant of cool climates, and therefore is found more rarely in the Southern localities mentioned. It also grows over Northern Europe and Asia, and, curiously enough, is said to grow luxuriantly in New Zealand.

As the seeds are borne aloft by the winds, and are carried possibly hundreds of miles and in myriad numbers, it has given rise to the belief in some places that it springs up spontaneously after fires, whereas the fire simply burns the turf and furnishes a good seed-bed for the wandering seed. It grows very profusely among the stumps and burned forest districts of Wisconsin, Michigan, and Northern Canada, and occupies the soil for numbers of years, until the plow or grass sod drives it away. I have found it growing in several places in this locality, and have collected some seed, which I shall use to the best advantage in the effort to get it to grow more abundantly in places suited to its habits, yet I have little hope in this direction, but trust rather that it may prove of increasing value to those apiarists of the North who are enterprising enough to move to any accessible areas of bloom. One very favorable point in its habits of growth, rendering it of value to apiarists, is its time of blossoming. It comes into bloom from the middle to the last of July and continues almost to the frosts of Autumn. The colonies of bees that have been wintered in the cold climates where it grows, are in the best of condition to gather the honey from it, having become very strong during the earlier flow from clover and raspberries and other honey plants.

That it has produced paying crops, during the generally poor seasons of the past few years, is a fact, and that it will be made to yield profit more extensively, is believed by many near these favorable fields. The failure of the honey crop in localities just beyond reach of the oceans of bloom of this *Epilobium*, tends to prove that atmospheric conditions are not in all cases responsible for the failure of the clover, linden and other flowers to secrete nectar.

The honey from this plant is not excelled by any that I have ever tasted. It is of light color, good body, and has a mild and delicate flavor somewhat like that of Alfalfa honey. It does not give to the mouth and throat as much of that *smarty* taste as other honeys.

Those who are fond of buckwheat or any other strongly flavored honeys might pronounce it flat, or perhaps on that account adulterated. From its mild and soothing effect upon the throat I should imagine it would prove very superior for treatment of throat and bronchial troubles.

AGR'L COLLEGE, Mich., Jan'y 26, 1892.

How to Ship Bees as Successfully as Queens are Mailed.

EMIL F. NEBEL.

Nyour leader of March you have given nearly all the principal points for shipping bees, by the pound, in nucleus form, and in full colonies. I might add a few suggestions, having put up for shipment many a nucleus, full colony, and hundreds of pounds of bees. In only one instance was there a partial failure, and this was owing to the great distance and the earliness of the season. This shipment consisted of 45 lbs. of bees sent to Manitoba, May 10th, 1888. 11 lbs. of this consignment died while *en route*. The cause being mainly that three lbs. had to be put in each package, and this necessitated the taking of the entire force from each colony, which at this date included many *old* bees.

With us the breeding season is only nicely under way by the first of April; so that by the 10th of May we have not very many young bees. Old bees do not amount to much for successfull shipping when long confined and often disturbed which is the case while in transit.

When preparing bees for shipment I make it a point to secure mostly all young bees that have not done much field work, this can be accomplished by removing the colony to a new location and placing a new hive, with several frames of brood from the former, on the old stand to receive the old working force that goes to the field during the day; then late in the afternoon proceed to confine the bees in their packages for the next day's shipment. This preparation is made for nuclei and bees by the pound. Full colonies ought also to be made up the

previous day by giving water, seeing that their queen is in good condition, that they have plenty of food, spacing the frames to remain so permanently while *en route*. The next morning tack wire cloth above, then close the entrance and we have all the force that belongs to a full colony leaving no stragglers behind from colonies shipped.

When nuclei and bees by the pound are made up of young bees as above, even for several thousand miles travel, there is no complaint received that "half the bees arrived dead;" on the other hand there comes a notice that "bees arrived in good condition only a few, three or four, dead."

Bees purchased by the pound when most of them are old field-workers are of very little use to the purchaser in building up a colony. Old bees sent out with nuclei are not so bad; in this case the brood accompanying will hatch in time to take the place of the veterans.

A great mistake many make is in buying bees too early in the season before the wintering force disappears. This applies mostly to bees purchased by the pound.

In preparing packages for shipment in very warm weather, plenty of ventilation is given by the aid of wire cloth at top and bottom, and a projection of one half inch is made by tacking on strips over the wire cloth across the ends, at top and bottom to prevent anything from being placed on the packages, close to the wire cloth, to exclude proper ventilation, or to have the packages set flat on the floor so air cannot pass underneath; then, too, plenty of space is given on sides and top to give a chance to spread the cluster should they be placed in too warm quarters.

In case of reaching a colder climate they will readily cluster compactly to meet their necessary demands for warmth.

When shipping colonies or nuclei it is but very little trouble to partly fill a comb with water, which will insure them enough, should the express company fail to sprinkle them as requested per direction, which should accompany each shipment. In packages of bees by the pound a section of comb with some water in it is the proper thing, and cream candy made of sugar and honey for food.

Wired frames, or rather combs, are almost an absolute necessity to prevent combs from being seriously damaged. I was present one day at the loading of some nuclei

into an express car, when to my surprise they were placed on their sides, the combs lying horizontal, imagine the condition in which these would have arrived if allowed to remain so for any length of time on a warm day, and combs not wired.

The selling of bees by the pound at present prices is not a very profitable business, especially when two and three pounds are ordered in one package.

To take three pounds from one colony *literally destroys* that colony for much further use, except as a small nucleus and a few extra combs of brood to be given to other colonies. Taking into consideration the difference of what three pounds of bees will accomplish in a fair season, and the selling price of the same at the present prices, the trade in this line bids fair to be abandoned.

I notice that Mr. Root has discontinued the sale of bees by the pound. I also notice that the talk of mailing bees in quantities has ceased.

HIGH HILL, Mo. March 19th, 1892.

Imbedding Wires in Foundation by the Use of Electricity.

W. E. DAGES.

ANY ONE conversant with electricity knows that a charge of sufficient strength will quickly heat a wire; the degree of heat depending on the size and length of the wire and the power of the current. When I read in the *A. B. J.* that Mr. Dages had succeeded, by the use of a cheap, home-made battery, in imbedding wires in foundation, I thought: "Why hasn't somebody thought of that before?" I at once wrote to Mr. D. for further particulars, and he sent the following.—ED.

To make a battery, take three, quart fruit jars (glass), and cut off the tops just below the taper. The best way to do this is to cut with a glass cutter's diamond, then tap lightly with a small hammer or the head of an iron bolt, all around inside the jar, just opposite the cut made by the diamond, then the top will come off just where the diamond made the cut. Another way is to file a groove around the jar, or grind one with an emery wheel, then tap with a hammer. This is the way I do it, although it is not so perfect as the above methods, yet it answers the purpose, take a red hot poker and move it slowly around the place to be

cut. When I have been around the jar about twice I drop about a table spoonful of cold water on the place from whence I removed the poker, when the top will break off; but not always so very straight.

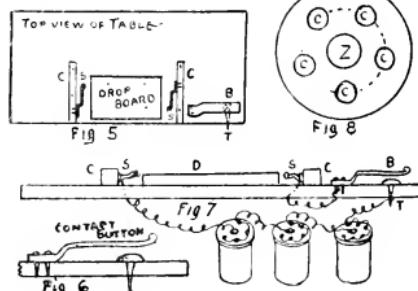
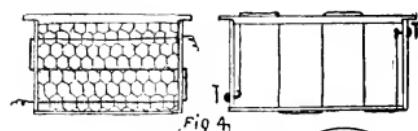
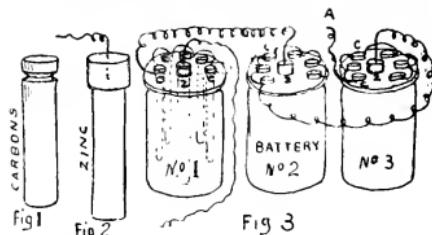
Out of $\frac{3}{4}$ hard wood make a round cover, $\frac{1}{2}$ inch larger all around than a jar, for each jar. Scribe a circle, on each cover, one inch less in diameter than the inside diameter of a jar. Make five or six holes through this circle: having them equally distant from one another and of such a size that a carbon will fit tightly in each hole. (See fig. 8, C, C, C.) The center hole is for zinc. The more carbons used, the higher the tension of the battery. Get carbons long enough to reach within $\frac{1}{4}$ inch of the bottom of the jar when complete. [In this place, waste pieces of carbon long enough for this purpose can be obtained of the electric light trimmers, simply for the asking.—Ed.] File a notch around one end of each carbon, $\frac{1}{4}$ of an inch from the end. (See fig. 1.) Put the carbons half way through the cover and fasten one end of a No. 20 copper wire around the notched place in one carbon; then wind it around the next carbon, and so on, until the last one (in that cover) is reached; leaving one foot of surplus wire for making connection. Shove the carbons through the cover until the shoulders formed by the wires rest on top of the cover. A little melted resin and beeswax poured around the wire and carbons, on top of the cover, will make permanent connections.

A piece of zinc (cast from any old scrap) $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter, with a shoulder and a wire cast in it (See fig. 2.), the zinc to fit loosely in the cover, is next needed. Amalgamate the zinc and its consumption will be less rapid. To do this, take one part sulphuric acid and two of water and put in a saucer with some quicksilver. Rub the zinc with this mixture, using a woolen cloth, until the zinc is bright. Amalgamate only below the shoulder.

With both the zinc and carbons in place, put the cover on the jar and fill the latter with water to within $\frac{1}{2}$ an inch of the cover. Take off the cover and mark the water line, by pasting a strip of paper on the outside of the jar, just at the point reached by the water when the cover is off. Treat all three jars and covers the same.

To make the solution take one part commercial sulphuric acid and seven parts water. Pour the acid slowly and gradually into the water, stirring it with a glass rod or

a hard wood stick. To each quart of this mixture add four ounces bichromate of potash, or about three ounces to each jar, stirring it until it is almost dissolved. Pour the water from the jars and pour in the solution until it comes up to the aforesaid water line: put on the covers; place the zincs in their places and "connect up." (See fig. 3.)



To connect the battery, take the surplus wire from the carbon of one jar and connect it to the zinc of the next jar. Take the carbon wire from this jar and connect to the zinc of the third jar. Now you have two surplus wires left; one from the zinc in jar No. 1, and the other from the carbon in No. 3; i. e., positive and negative terminals. Take in your right hand the surplus wire from No. 3 and touch it to the surplus wire of No. 1, and you will see quite a flash of lightning. You will then know that the battery is in good working order. Don't be afraid of a shock, for there is none where there is no magnetism, and there is no magnetism about a naked battery. You might burn your fingers though, by catching hold of the small wire in the brood frame when the current was on.

A word of caution just here. Remove the zincs from the solution as soon as you are

through using the battery, otherwise the solution will become over-charged with sulphate of zinc which renders it worthless. Make all connections as *short* as possible, as this style of battery is of low tension, and would not heat 50 feet of wire².

Oh yes, it will burn a 1 or 5 volt lamp, as bright as day, for a few minutes, but 15 minutes with a closed circuit at any one time would ruin the carbon element forever; but, if the battery is used simply for imbedding wires, the carbons will last for years. Before connecting, scrape, or emery-paper, all parts to be connected. Soldering them is better. For all connections, use copper wire, about No. 20.

[If a battery of three jars proves too weak, more jars can be added until the desired result is obtained. If any one should prefer to buy batteries instead of making them, they can be bought (those called the Diamond Carbon) at \$1.25 each, of the Electrical Supply Co., 102 Mich. Ave., Chicago, Ill. —ED.]

To wire a frame attach one end of the wire (use No. 30) to a tack in the end bar, (See fig. 4) and after the frame is wired attach the other end to a tack in the opposite end bar; the tacks to correspond with metal springs, S. S. on cleats in fig. 5. No one part of the wire must touch another part throughout its length nor any part be connected to the same piece of metal as another part is fastened to, as if your wires cross each other, there will be what is called a "short circuit," and the current will take the shortest route back to the battery, leaving part of the wire "dead." If you undertook to imbed crossed wires, only that part would be imbedded that the current heated, and you would count the whole thing a grand failure; yet, if in your style of wiring, the wires *do* cross, put a small piece of paper between them, just enough to keep them separate, and you will meet with no trouble at all.

To rig up a table, make a drop board, just thick enough so that when nailed to the table, and a wired frame laid over it, the frame will rest on the table and the wires will be the proper distance above board, i. e., half the thickness of the foundation. Next make two square cleats, as thick as the end-bars of a brood frame are wide. Make two metal springs (thin brass) as wide as the cleats are thick and fasten to the cleats with screws, (See fig. 5.) Nail the cleats, one on either side of drop board, (See fig 5) so that

when the end bars of the frame rest between the cleats and drop board, the tack heads (to which the wire is fastened) will press tightly against the springs. Have the springs two or three inches long, so if you don't get the tacks always in the same place on every frame they (the tack heads) will press against the spring anyway.

To make the contact button take some of the same metal (brass) as mentioned above, $\frac{3}{4}$ inch wide, and three inches long, and bend it in the shape shown in fig 6, and screw it to the table, six inches or thereabouts, to the right of the right hand cleat. Just under the spring or raised end, drive a brass headed tack, of the kind used in perforated chair bottoms. (See fig. 6.)

To connect the battery with the table (make all connections *under* the table for convenience as well as looks) take the surplus carbon wire in cell No. 3, run it through a small hole made with an awl close to the tack in contact button, wind the wire around the tack, between the table and the head of the tack, drive the tack home, and *that* connection is complete. (See fig 7.) Make an awl hole through the table, along side of one of the screws that hold the contact button to the table, another awl hole close beside the spring, in the *right hand cleat*, put one end of a short peice of wire around one screw in the contact button, drive the screw home. Run the other end of the wire down through the hole made in the table, and up through the hole alongside of the spring in the *right hand cleat*, and fasten the end of the wire around the screw and drive the screw home. (See fig 7.) Now take the surplus *zinc* wire in cell No. 1 and connect it to the spring in the *left hand cleat*, and your table is complete. (See fig. 7.)

To operate the "machine," place your wired brood frame over the drop board with the top bar from you. See that the tack heads press against the spring in the cleats, place your foundation on the wires, "press the (contact) button and the electricity does the rest." A man with nimble fingers could do ten a minute. Don't you think I have made it all plain?

MORRIS, Ill.,

March 26, 1892.

P. S.—I enclose small sample imbeded by electricity. Examine it closely, and you will find it quite hard to tell from which side the wire entered.

I am now working on what I call, for want of a better name, an electrical swarm noti-

fier. When a swarm issues, an electric bell placed in some convenient place in the house will ring. It will also register faithfully the hive from which the swarm issued. With the above features it also makes a first class burglar alarm. I don't know as other parties could make use of such an arrangement, but I think the burglar alarm feature would be suitable for this locality.

Yours, W. E. D.

Comments on a Beginner's Day-Book.

No. 5.

E. E. HASTY.

THE juvenile mind, when contemplating bushels and bushels of apples and peaches and pears going to waste on the ground, often feels sad at being able to eat so few. My own condition in looking over the May record is somewhat similar; my space will hold but a fraction of the citations I would like to comment on.

"May 2nd 1880. Beautiful day, Thermometer 57° 79° 65°. Run not appreciable. Loss by night 7 ounces. Bees very busy; but either they did not get much, or the exhalation of matter retained during the cold spell overbalanced all gains."

Here's where the value of my scale came in—let me right into the fact that appearances are often amazingly misleading. Bees often just, "rally round the flag" when they are really getting very little honey. The opposite is sometimes true also; they may seem to be doing but little when they are gathering in the sweet quite rapidly.

"May 4th. Thermometer 52° 83° 66°. First unmistakable gain of the year, 2 ounces. Loss by night seemed to be nothing. Wild plum in bloom. The bright orange red pollen I have been wondering about is from dandelion—fine crop of them on my pasture. Michigan queen all right and laying."

I was beginning to get desperate for some honey which could at least be weighed on a delicate scale; so when I got two ounces I felt a bit more "asy" in my mind. The next day there came in almost a pound; and the next 1lb 12 ounces. Quite likely there was at least one little run of honey before I got my scale set up. It is no uncommon thing, however, for May to get well started before the first quarter-pound run comes in. The first in 1881 was 3 ounces May 30th. The lack of any loss by night shows that the cold spell of two nights and a day April 30th had stopped the brood-rearing.

Claytonias also yield an orange pollen which can scarcely be told from dandelion. I remember of A. I. Root telling us, in one

of those delightful talks of his when bees were his hobby, that this pretty spring pollen came from maple. Maple yields a plain yellow pollen I believe. He had followed the bees to a sugar-bush. Had he gone a little further, and looked a little sharper, he would probably have found the ground underneath a mat of dandelions or claytonias—possibly both. A little later buckeye gives us the reddest pollen of the year.

"May 6th. Put Ashtabula queen caged in colony 2-7. She is ordinary colored, short, thick, and very spry. In doors see flew about, fell from the window, rolled in the dust &c. Scissors wouldn't cut wings. She wouldn't stop to eat honey. Came near cutting her foot off. Wet her in my mouth, which I do not think is good for her. Mortised her cage into the comb."

When a bold and agile queen persists in putting a hind foot between the shear blades to push them away, the moment you touch her wing, you have a pretty tough problem on hand. Specs that multitudes of clippers cut off foot and wing too, and never take pains to find out what they have done. The Doolittle method of using a keen pen-knife on the tough skin of your thumb is doubtless much safer; but I went out of the clipping business forever before I heard of it. I had advertised for a pure black queen that had led a *second* swarm the previous season and whose colony had stored surplus honey. The wording of course was to secure a young and superior queen. She was a daisy. Her bees were desirable—except that they were about the worst robbers I ever had to deal with.

"May 8th. Some colonies have begun to lengthen cells with white comb."

This you see is only three days' time since honey sufficient to effect the wax secretion began to come in. It requires so short a time to entirely change the prospects of an apiary that the bee-keeper needs to keep standing on his tip-toes. And the non-professional stands nowhere, because he seldom knows what the *present* condition of his bees is.

"May 12th. First SWARM. Italians. Hived them at 12-4 on a frame of own brood. Reduced the old colony to about Bees 7, Brood 36, by giving frames of brood to 11-6 and 11-1. Robbers started on 11-6 toward night. Frame of strange brood seems to confuse them, and keep them from resisting."

Gentle compositor, you just leave those capitals be. A fellows first SWARM, you are to understand, is almost equal to a fellow's first BABY. It's queer if they can't have five letters out of the upper case.

I presume nearly all who keep anything like accurate records of individual colonies have felt the want of some definite way to express the number of bees and brood in a colony they have examined. To such I recommend my way of doing it, which here occurs for the first time—Bees (7) Brood (36.) Eight frames well covered with bees would record Bees (24) three to a frame. My Italians, as not infrequently happens, had so nearly all gone with the swarm that only enough remained to properly cover a little more than two combs. I presume I feared to trust so few bees with a hive full of brood; and perhaps also the prevention of after-swarms was in my mind a little. Practically brood seems able to make some warmth for itself, and, rather seldom perishes in such cases. An enthusiast must needs be a little fussy, and so I put the brood elsewhere. But to return to the recording method, it is easy to contract the habit of giving each frame its number as one takes it up, and adding it to the total already in mind. Then when all have been lifted you have the census of the colony in convenient shape to be marked down. The number is three to each comb, if properly covered, two or one if scantily covered, and four or five if the comb is somewhat, or more than somewhat, piled with bees crawling over each other. As to brood my unit of count is the quarter thousand; which makes a patch a trifle over three inches square. Holding a frame before me I note how many three-inch squares the patch of brood would divide up into; double the figure for the two sides, and add up the totals just as in the census of the bees. So Brood (36) means 9,000, thus rudely counted. I must confess I have never counted the bees on a normally covered comb. It would be a little over 2,000 if a 4 lb swarm covers 8 combs—same if we assign each bee a space half an inch long by a quarter inch wide. So Bees (1) would be 666; and Bees (7), as in this case, 4,666. I see with interest that comrade Aikin has a recording system in last REVIEW (page 97). It is easier than mine, but does not come so near accuracy.

“ May 20th Devised robber-trap to decrease snatching, and to find out which stands rob most. Flour thrown on them when let out.”

Lots of ingenuity was expended on this implement; but after a few days' trial it went to the lumber-room, and never got out. When robbers are bad the proper course is to stop, and resume after bees have stopped

flying for the day. If matters are so peremptory that you cannot stop you must have a tent of some kind, big enough to cover yourself and hive. My trap had an upper story into which robbers crawled, fly-trap fashion and couldn't get out. Caught lots of them—that was not the trouble—but the number bothering one while at my work was not much decreased. Sometimes I kept my captives till the next morning and then destroyed them: sometimes after a brief imprisonment I let them go.

“ May 24th. The Italians at 10-9 swarmed again, but went back. They are not strong enough to swarm, and have no young brood or queen cell. Probably a case of following the young queen out on her mating flight. They flew very high and scattering. Removed the entrance-blocks from all but a few weak swarms. Hope the method of keeping pretty closely closed, and then opening in a warm time when they begin to think of swarming, will assist to check the swarming impulse.”

Vain, vain, vain, all vain both these and all my other anti-swarming devices so far. Just notice these Italians. They had swarmed themselves down to one pound of bees; and their keeper's officiousness had reduced them to 9,000 head of brood, one half of which may have been out at this time, and here they were eager to swarm again the minute the queen left the door-step—and the regular swarming season not begun yet. It certainly was not the honey flow that put the mischief into their heads. For two weeks 3 ounces had been the largest run, and most of the days nothing at all. All the same we shall have an effective anti-swarming method or device some day I hope. The very fact that I have in my efforts to prevent swarming greatly increased the number of swarms from the colonies treated shows that something can be done, if it is only rightly done.

RICHARDS, Ohio, April 19th, 1892.

The Kind of Bees, Food, Packages, and Management Needed in Shipping Bees by the Pound.

G. W. GATES.

GOU suggest, in your leader for March, that I give more particulars in regard to the food given bees in shipping. The food used for the bees sent you was powdered sugar and honey worked thoroughly together and allowed to stand several days before being used.

This always carried well when the cages were kept right side up as they usually were

in large shipments, where enough could be crated together to make it inconvenient to handle carelessly, but I do not use it any more, as much of the sugar is sifted down and wasted; besides, the outlay for sugar is considerable and honey is preferable. My experience—which has been mostly for long distances—is that less than one pound of food for each pound of bees is unsafe.

I once sent a lot of bees to Canada. They should have crossed at Detroit, but were carried around by Buffalo and were on the road over a week, yet "There was not a tea cup of dead bees" in the eight cages, (24 lbs.) but I have had bees reported starved with the same quantity of food, when on the road only three days.

I now make my cages for three pounds of bees, (which is a fair sized swarm) to take an L. frame across the cage diagonally, and seldom lose any. I prefer an old tough comb, *just extracted*, then weigh it and *rub in, with the hand*, at the top of the comb, the quantity of honey needed, and fill the balance of the comb with water, rubbed in the same way.

For a one pound package I now use a full section of honey, and my losses have been far greater with one pound than three pound packages.

You say, the matter of ventilation and space is one that calls for judgment. I used to make up my cages before hand and have them ready and therefore uniform, so it is safer to err on the side of too much space rather than too little.

I once sent a lot of bees to your State, (Mich.) that arrived "In a blinding snow storm," yet they went safely and did extra well afterwards.

These were sent on five or six combs, in Simplicity bodies, with wire cloth top and bottom, the top two inches above the frames, yet had they been received by any one not knowing just how to handle them they might have suffered from too much space.

I once thought that quite a business might be built up in sending bees from here after the honey season, (which is over by May 20th,) and before it begins where the most of my orders are from, but the extra trouble of doing all the work under a tent and the extra precautions about robbing make it more desirable to work during the honey season; but the small margin in price, the trouble of getting skilled labor, together

with the discouraging effects of reported losses make it a hazardous business.

You compare the difference of now and a few years ago in sending queens. I had a shipment of bees, (30 lbs.) lost in this way: a package of fruit dropped on the crate during the night and punched a hole in it. The hole was not noticed when they were transferred, which was before daylight, but the next day I expect they made themselves conspicuous as they arrived at their destination wrapped in *oil cloth* and then boxed up in a shoe box *all dead!* Many other instances showed plainly that the packages were not properly handled on the cars. Skill in packing will not remedy some of these things.

I now crate the cages so the legs project above as well as below. I do this for two reasons. They are as safe wrong side as right side up, and any thing put on top of them is held away from the wire cloth.

The best bees for shipping are obtained by removing the hive and letting the old bees occupy a new hive on the old stand for a few days where they can have queen cells well along from choice stock, and unite again after shipment. [I suppose the young bees from the old hives are shipped—ED.]

I use $\frac{3}{8}$ stuff for sides to three pound cages ($9 \times 15\frac{3}{4}$) and $\frac{1}{8}$ stuff for the ends, (9×12); then, in crating, longer $\frac{1}{8}$ stuff, really making the ends double. This gives a safe and light cage. Common building lath does for legs.

For one pound cages I make a box $4\frac{1}{4} \times 4\frac{1}{4} \times 12$ inches. In one side I sink a piece of hoop iron. This makes a form over which to wrap the wire cloth. Then a thin piece of basswood, under the lapped end and over the iron, clinches the strawberry box tacks and holds the cage securely. Half inch ends, with a section of honey, make the cage complete. After the bees are in, light sticks should be nailed from one end to the other to insure their not being mashed together. If the express men would handle these carefully enough not to break the honey from the sections, they ought to go safe.

I would not have ventured to give these particulars, only that you asked for them, but if they are worth any thing to any one use them; otherwise destroy them and no harm is done.

BARTLETT, Tenn.

March 28th, 1892.

When Sugar Stores are Best—Crystallization;

How to Avoid it and its Ill Effects.

F. A. GEMMILL, *



SOME of your readers may remember that I reported, in the Oct., 1891, REVIEW, the granulation of sugar syrup fed to thirteen colonies. You asked me to report in regard to how they wintered. The time has now come when I can make the report, accompanied by additional facts showing that there are different grades of what is generally sold as granulated sugar: also that late fall stores are not a safe winter food in this locality.

It may not be out of place to mention that the stores that I desired to remove were gathered late in a locality abounding in goldenrod, boneset, asters, etc. From what I can learn, the locality resembles in this respect the one in which Byron Walker has lost so many bees.

In place of the stores, thirteen colonies were given dry, clean combs, five to each colony, and then fed sugar syrup. Shortly after feeding I discovered that the sugar had granulated; scarcely any remaining in the liquid state. At this juncture I asked your advice, as I saw that I could not carry out my original purpose, viz., that of wintering part of the bees on full sugar stores and part on fall honey, all of the bees having assisted

* Francis A. Gemmill is a Scotch Canadian by birth; now 46 years old. At the age of 17 he became an enthusiast in apiculture, getting his first Italian queen of Father Langstroth in 1864. He also had one of the movable comb observatory hives, of the L. pattern, made at the same time, and it still remains in his apiary. Although not at any time what is now considered an extensive apiarist, his colonies never exceed 75 in number, he has, nevertheless, kept pace with the times, and, for several years past, has taken an active part in the pursuit. He has been President of several county associations, as well as filling the office of Vice President of the Ont. B. K. A. for two years in succession, and was promoted to the Presidential chair of the latter at the meeting held in London, Jan. last. He also took a prominent part in securing the passage of the foul brood act now in existence in Canada; and, more latterly the law prohibiting the spraying of fruit trees while in bloom. In his younger days he served a term in his father's printing office; later he followed the occupation of druggist for ten years; but for a number of years past he has occupied a position in the civil service of Canada.

in gathering the fall crop. You, no doubt, recollect that I suggested closing all upward ventilation and giving a large entrance in order to retain, if possible, sufficient moisture to enable the bees to utilize the crystallized stores. You reported a similar experiment on a larger scale that proved disastrous to the bees, accordingly I took your advice and gave each colony two combs of fall honey, that had been removed; I having no other to give them.

It is with satisfaction that I report the successful wintering of the colonies having both sugar (crystallized) and fall honey for stores, while a like number of colonies, considerably stronger in numbers, but having only honey (fall gathered) for winter stores came through in anything but a satisfactory condition.

This proves conclusively that fall honey alone is not a safe winter food in this vicinity, but that a mixture of sugar, even though crystallized, and such honey, makes a safe winter food. I may add that this conclusion is not based upon this single experiment, but upon experiments extending over several years, the only difference being that in former years the syrup was fed in addition to the stores already in the hives, and the bees allowed to mix things to suit themselves.

Before leaving this part of my subject, I would say that I have had no difficulty in wintering bees on natural stores, in another locality where no honey is gathered after basswood; and this, notwithstanding the fact that but little brood is raised in the fall. But it must be remembered that the bees do not exhaust their vitality in brood rearing or in gathering late honey.

Although fall honey is usually looked upon with favor, the following spring after discloses this result: such flows are over-stimulating and contain a superabundance of pollen, causing the bees to endeavor to replace the old, worn out bees by raising young ones so late in the season that sufficient cleansing flights are not assured to put their young bees in the right condition for settling down into a good, quiet, winter's nap. Colonies with even a liberal amount of such stores never seem to know when to settle down into anything like repose, whether wintered in doors or out, and spring usually finds them mere nuclei, if they survive at all.

Like Mr. Heddon, I have concluded that there is a difference even in granulated sugar.

Never until last fall had I experienced any trouble from the sugar crystallizing in the combs. When I discovered the trouble, I fed no more out of that barrel. By the way, the sugar in this barrel was composed of very fine granules, some being *quite* fine. It resembled the sugar used by confectioners for icing purposes. Looking around I found a barrel in which the granules were larger, almost square, and of uniform size. With a syrup made of this I fed twenty colonies. To the sugar given to one-half of them, tartaric acid was added, *a la* Heddon, and to the other half honey was added, as advised by yourself and Mr. Doolittle. In neither instance did that sugar crystallize, and there is no doubt in my mind that there is a difference in the character of the so-called granulated sugar; notwithstanding the assurances of the dealer to the contrary. Possibly the seller thinks that as the sugar is fed to the bees under some circumstances, the importance of its effect on the "critters" is small as compared with the possibility of its becoming mixed with the honey in the hive and sold as the pure article gathered from the flowers. Consequently, it behooves us, as bee-keepers, to winter our bees on clover or basswood honey, as far as practicable, and to say nothing more about sugar-honey being sold *even under the proper name*.

By the way, can't you congratulate us Canadians upon the passage of a law, prohibiting the spraying of fruit trees when in full bloom? (See copy of law enclosed.)

STRATFORD, Canada, April 17, 1892.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

TERMS: — \$1.00 a year in advance. Two copies, \$1.90; three for \$2.70; five for \$4.00; ten, or more, 70 cents each. The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, MAY 10, 1892.

REMOVING QUEENS, to prevent swarming, is advised by Mr. Manum, instead of caging them in the hive.

Since beginning the publication of the REVIEW I have never worked harder nor found more enjoyment.

THE APICULTURIST is improving again. During the last few months it has contained some very good correspondence.

BEES HAVE DIED in large numbers, in some localities, the past winter. The greatest losses are reported from those places where the bees gathered large quantities of honey dew the preceding season.

"YOU TURN the crank, and the machine does the rest," may be truthfully said of the section - folding machine, manufactured by E. W. Philo, of Half Moon, N. Y. I have one of the machines, and it will do all that is claimed for it.

BLACK BEES are again being discussed. That they have some good qualities is true, but the majority of bee-keepers prefer Italians, and as a man can have any kind of bees that he wants, it looks as though there was a *cause* for this preference.

THE OFFICERS of the Ontario Bee-Keepers' Association are as follows: President, F. A. Gemmill, Stratford; Vice President, A. Pickett, Nassagaweya; Secretary, W. Couse, Streetsville; Treasurer, Martin Emigh, Holbrook; Foul Brood Inspector, Wm. McEvoy, Woodburn.

TALLOW has often been recommended to prevent the use of propolis on frames in a hive. J. A. Green asks in *Gleanings* if anybody has used it enough to know anything about it. He once rubbed a few frames with tallow, and they have since remained free from propolis: neither have brace combs been built upon them.

BYRON WALKER gave me a call the other evening while on his way home from Northern Michigan where he has found and expects to occupy a location abounding in spring flowers, raspberries, clover, basswood, *willow herb* and fall flowers. After seeing how bees are wintered in that locality, he is inclined to give their owners but slight credit for their uniform success—the secret is in the winter stores.

FIVE - BANDED Italians have pleased C. A. Bunch, of Nye, Ind., by not swarming and storing more honey than the other strains of Italians. "Besides," he adds, "most of us poor mortals admire that which is beautiful."

W. C. FRAZIER, so he writes me, thinks that a wholly new system of apiculture could be invented, differing entirely from the present system as regards hives, manipulation and wintering. He says: "this bee business has been once around the circle and we are now about back to box hives."

MICE CAN DESTROY whole colonies of bees. Mr. West unpacked the bees belonging to Mr. McColl, (the man who is so successful in raising alike) and found several colonies destroyed by mice. Others were seriously injured. They were packed out of doors in clover chaff, and where the mice did not get in, they wintered well.

D. A. PIKE does not take much stock in the plan of a queen breeder rearing all his queens from one queen and the drones from another. He should have all of his queens bred up to such a standard of excellence that he would be willing to breed queens from *any* of them. He is then prepared to send out good queens, and not until then—so thinks friend Pike.

"THE LOWEST HIVES in the cellar did not contain a live colony." This is what a bee-keeper told me this spring. He said the cellar was damp and cold, but just how damp and cold he did not know. The bees near the top of the cellar wintered quite well. In my experience in cellar wintering I have noticed that the colonies near the top of the cellar usually wintered best. Is this a hint for me to keep my cellar warmer?

VENTILATION for bee-cellars and wintering repositories is being talked of again. I wish that I could believe it necessary—I always wanted to believe in it—but I have wintered bees so perfectly buried under the frozen earth, that my faith is weak. But then, in some conditions, it may be necessary. If a man is wintering his bees successfully by the use of ventilation as a help, let him continue its use; on the contrary, if he sees no need for it, why go to any expense to secure it?

HOW SUGAR MAY BE AN AID WITHOUT BEING MADE INTO HONEY. (?)

Touching the sugar - honey discussion, Chalon Fowls writes: "But there is one point you mention that you can safely harp on, first, last and all of the time, and that is feeding sugar for winter stores. I have always found it profitable to do this, even with sugar at double its present price. Another thing, I believe the possibilities of heavy spring feeding, to obtain a large force of workers for the harvest, have never been half realized. I honestly believe that by the intelligent use of sugar, for breeding and winter stores, the honey crop from natural sources could often be doubled."

THE COST of honey production has been quite thoroughly discussed in *Gleanings*. Some of the articles are well written, but a great deal of ink has been used in trying to decide whether any of the income from the apiary ought to be counted as a salary to the one who superintends, or plans the work, and, if so, what amount. Of course, whatever time is used by the owner, or any one, in superintending the work, ought to be counted in the cost of the honey. There is one comfort about this, however, and that is that when the owner is also superintendent, as is usually the case, it makes no difference, so far as the amount of his income is concerned, whether one-half of the proceeds of the apiary come to him as superintendent's salary, or whether the whole amount left in his pocket is called profit. It's *his* money just the same, and calling it salary, or calling it profit, will neither increase nor diminish it.

OBJECTIONS TO THE GRADING OF HONEY.

There has been brought against the grading of honey the objection that it would produce a sameness, and remove that incentive to excel that ought to accompany all pursuits. If there is a grade requiring perfection, as I think there ought to be, this objection will not hold good.

Another objection is that different persons would grade the same honey differently, even when working by the same rules. There probably would be minor differences, but the grading would be much more uniform than when no general rule was followed.

It has also been said that if there were rules for grading that there must be an inspector in each market; and that the inspector and the middle man would combine to "beat" the producer. I think no inspector would be needed. These rules would be a sort of agreement among ourselves, indicating what we mean by certain grades. When a dealer quoted honey of a certain grade, at a certain price, every producer and purchaser would know exactly what was meant.

Where the producer takes a sample of his honey to dealers and sell direct to them, there is not so much need of a set of rules, but they would be a convenience, even then, while I think it is true that the great bulk of honey is sold without the producer ever seeing the purchaser.

I still believe that a set of rules can be formulated that will be sufficiently concise, yet broad enough to cover the needs of the entire country, and that such rules would be a great convenience.

THE SUGAR-HONEY DISCUSSION.

My request for the views of my readers in regard to continuing the sugar-honey discussion has brought replies by the score. It seems as though I had enough advice on hand to enable me to run the REVIEW a year. But I have no fault to find. It is exactly what I hoped for, and I thank the friends for their kindness. I find myself, however, in the position of a presiding officer when a tie-vote has been cast. As is often the case, beekeepers are divided upon the question. Some are anxious that the discussion be continued; wishing to have brought up the details of management. To such I will say that the management is exactly the same as feeding back honey. This subject has been made the topic of a special discussion in the REVIEW, and the gist of the whole matter has been gathered into a chapter in "Advanced Bee Culture," hence there is no need for its continuance on that ground.

Some of the articles, on both sides, are exceedingly well written, and the temptation to give them is very great; but the busy season is upon us, and we better turn our attention to something else than the continuance of a discussion that will degenerate into a mere theoretical wrangle over the wisdom or folly of having published an article that cannot be recalled. Time will

decide that question. At least, I think it will be better to allow enough time to elapse for some of those who are so excited over the matter to "cool down." I feel particularly grateful to those who, while holding views different than mine, had the kindness to say cheering words because I had the courage to stand by my convictions, even though I expected to stand almost alone.

EXTRACTED.

Having Colonies Strong at the Right Time.

Often, in the spring, have I noticed some colonies that were unusually populous, and, as I viewed them with gratification, I have thought: "Oh, if all the colonies were like these!" Time passed; the harvest came on apace. Other colonies swung into line with their ranks fully as populous, and piled up the honey far ahead of those that had been so strong early in the season, and I have looked on and wondered. Upon this point, F. Greiner has the following to say in *Gleanings*.

"If a colony of bees arrives at its maximum strength any length of time before the honey-flow commences, it will not do nearly as well as some other colony just getting there as the season begins. This is particularly the case with such as have older queens."

Empty Combs and Old Foundation Versus Fresh Foundation.

There has been a great difference of honest opinion among the bee-keepers in regard to the value of drawn combs in the sections at the beginning of the honey harvest. J. A. Green thinks that he has discovered one reason for this difference of opinion, and, from a most excellent article that he sent to *Gleanings*, I extract the following:

"But the principal reason why many do not see this question in its proper light is, that they do not compare the sections of drawn comb with those filled with *fresh* foundation. I have known for years that freshly made foundation is better than that which has been exposed to the air for some time, but I never saw the difference so strikingly shown as in an experiment last summer. On account of lack of help, many supers were just as they had been left the preceding summer, the sections containing full sheets of foundation untouched by the bees. Wishing to try a new make of sections, two or three rows of the old sections were removed from each of a number of supers, and replaced with the new ones containing fresh

foundation. Only a moderate amount of honey was being gathered, and but a few colonies were making any progress in the supers, so that I was surprised, a couple of weeks later, to find most of those new sections built out and finished, while in some cases the old foundation, right alongside in the same supers, had not been touched."

Carniolans Good Workers.—Care of Combs.

From an excellent article contributed by E. France, to *Gleanings*, I make the following extracts :

"What kind of bees is best? Now, to tell the truth, I don't know. I commenced with the blacks, and I must say they are hard to beat. I have tried several strains of Italians, some of which have done pretty fair work. But I think the hybrids are better workers than the pure Italians. I am now trying the Carniolans—the dark-colored ones. They have done first-rate for me the last two years. In fact, they have done the best of any bees that I have. My home yard of 100 colonies consists of Carniolans."

"Another important item in producing extracted honey is to have plenty of extra empty combs, so when the honey-flow comes we can tier up and give the bees plenty of room to store honey. We work our L. hives three stories during the honey season. In the fall we take off one set and store them away until wanted the next year. In this latitude I take them off in October, and pack them away in the third stories, piled one on the other in our comb-room. If they were taken away from the bees much sooner than October, the moths would destroy them, unless we smoked them with sulphur. Combs packed away in a tight room where they will freeze hard are safe from the moths. I have kept them all summer with no signs of worms about them."

Imbedding Wires with Electricity a Success.

Imbedding wires in the foundation put into frames, by heating the wires with electricity, is a new "wrinkle," and we wish to know as much as possible in regard to it, hence, I am glad to be able to copy the following from the last number of *Gleanings*.

"Some two months ago a correspondent of the *American Bee Journal* stated that he had succeeded in imbedding wires into foundation by means of electricity from a battery. This set us to thinking and experimenting, although we had entertained the same ideas some eight or ten years previously; but on account of the intersecting wires by the old way of wiring, the plan was not feasible. But since we are beginning to use the horizontal plan, no wires intersecting, so that a current can run from one end of the wire to the other, the matter has assumed a new aspect. In our last issue we stated the progress of our experiments. Since that time we have been imbedding the wires to a lot of frames by electricity. The form of

battery that we now employ is three cells of bichromate of potash, each of a gallon capacity, with the carbons in the large cell, and the zinc in the usual porous cup. Since Mr. Golden's article appeared in type, as given in another column, we began experimenting anew; and the result is, that we find that we can imbed the foundation on the wires perfectly. After the job is done, the wire lies nicely imbedded in the center of the wax: and, more than all, it is covered with a very thin transparent coating of wax. Sometimes bees are inclined to gnaw around the wires; but we imagine that, if the wires were covered with a film of wax, the bees would be less inclined to do so. However, experiment will decide this point. At present it looks as if imbedding by means of electricity might not be so very expensive after all, and especially so if we consider the nicety of the work. We imbedded this morning the wires of about 50 frames into foundation by electricity, and the work is beautiful. By timing ourselves we found that we could put foundation on the wires at the rate of three frames per minute; so we think that the imbedding could easily be done at the rate of 150 per hour. In our next we will try to give you a picture of the apparatus, and how to make it.

We ought to say right here that it probably would not pay the small bee-keeper to imbed his wires by electricity; but it looks now as if it would be quite a saving in time for the large bee-keeper and all supply dealers."

Paint for Bee Hives; How to Detect Adulteration in Paint, etc.

In *Gleanings* for April 15, E. R. Root gives a most excellent article on the subject of paints. Lack of room prevents my giving all of the whys and wherefores, but the conclusion is that pure lead, zinc and French ocher, in equal parts, mixed with raw linseed oil, make the ideal paint. All these substances combine perfectly, and form a smooth, hard, durable surface of light straw-color, that will neither peel, crack, nor rub off. It is so nearly white that it is not an objectionable color for bee hives. The detection of adulterations may be accomplished as follows:—

"Any thing but linseed oil can usually be detected by the smell. Fish oil has a very sickening odor. Barytes and lime can usually be detected in the following way: Buy a small can of lead that you propose using with your ocher or zinc, as the case may be. Scoop out a little of it and put it in an empty tin can; pour on top turpentine. Mix thoroughly by stirring, and then allow this to stand for twenty-four or forty-eight hours. At the expiration of this time, pour off the top; and if barytes or lime is used you will find a sort of dry powder in the bottom of the can, that has failed to unite with the oil. This lime or barytes is a pos-

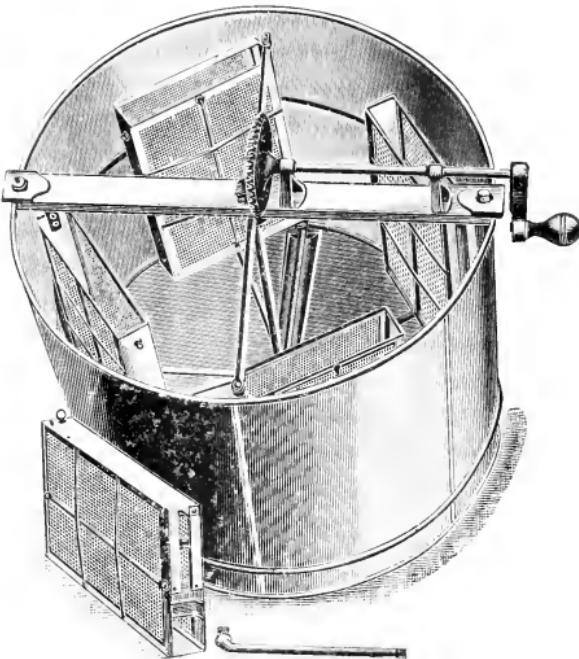
itive detriment; and the only reason it is put in is because it cheapens the lead. If, on the other hand, after making the test as above, you find no chalky residue in the bottom of the can, you may feel pretty sure that your lead is pure, or, at least, has nothing worse in it than an addition of zinc, which will not hurt it. Genuine French ocher, on the other hand, combines perfectly with the lead or zinc, and leaves no residue.

There is another very simple test, though perhaps not so positive in its results. Dip your thumb and finger into pure white-lead paste and rub them vigorously together for four or five minutes. If the paint is made of pure lead and linseed oil, a rubbing of the fingers for four or five minutes will still leave only a oily residue. If, on the other hand, the paint is adulterated with barytes

machine when at the Albany convention, and was very favorable impressed with the machine. The cut and description make every thing plain.

"The engraving herewith illustrates a reversible honey-extractor made and patented by E. L. Goold & Co., of Brantford, Ont. It can be made either as a two-frame or four-frame machine. For a two-frame Langstroth can 23½ inches in diameter is required: for a four-frame the diameter must be 27 inches. The baskets are reversed by means of a positive lever motion. The levers radiating from the center shaft work in a slot in the bottom of the comb pockets.

Reversing the crank reverses the center shaft, which in turn revolves the levers a little way, and thus causes the pockets to be swung around.



E. L. GOOLD'S REVERSIBLE HONEY EXTRACTOR.

or lime, two or three minutes rubbing will reveal a sort of dry powder between the thumb and finger. Linseed oil combines perfectly with lead, zinc, and ocher, but it will not combine with lime, barytes, or chalk, and hence the fraud is easily detected."

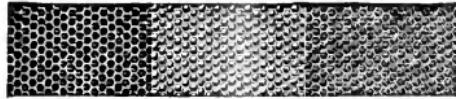
Reversible Honey Extractor.

R. F. Holterman, of Brantford, Canada, has sent to A. B. J. the following illustration and description of Goold's Reversible Honey Extractor. I saw a model of the

Unlike the Stanley extractor, when one pocket reverses, all must reverse. This is a great advantage.

The extractor has been in the hands of Goold & Co. for over a year, their object being to thoroughly perfect it before giving it to the public. It was carefully tried by some customers and myself in the apiary last year, and several changes have been made since its first invention.

The machine took the first prize at the Toronto Industrial Exhibition last Fall, for the best and most practical invention not heretofore shown at that exhibition. There were five inventions competing."



Hunt's Foundation

Is a superior article. Warranted good as any ever made. Dealers and others write for samples and prices. Sections and Dovetailed Hives in any quantity. Free price list of everything needed in the apiary. **M. H. HUNT, Bell Branch, Mich.**

2-92-ft *Please mention the Review.*

(Near Detroit,)

Italian - Queens.

6 Warranted Queens, \$5.00.
Send - for - Circular.

J. T. WILSON,
4-91-tf Pink, Kentucky.

It's Got the SNAP.

That is what our subscribers say, and they are coming in by every mail. Send 50 cents for a year's subscription to the **Missouri Bee-Keeper.** Monthly; 16 pages and cover; nicely printed on good paper. Money returned if you don't like it. Sample free.

Address BEE KEEPER PUB. CO.,
Unionville, Mo.

1892. 1892. 1892. 1892.

In 1892 **LEININGER BRO'S** are going to devote their entire time to raising

5-BANDED

Golden Red Clover Bees.

For further particulars write for our descriptive Catalogue, which will be ready about January 15th, 1892.

LEININGER BRO'S,
12-91 tf Fort Jennings, Ohio.

On Their Own Merits!

Those who have had queens from me say my

5-Banded Golden Italians

Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. **None but the very best Queens sent out;** large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00, 6 for \$5.00. Special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.

CHAS. D. DUVAL,

Spencerville, Mont. Co., Md.

42-91-tf

If you wish to advertise anything anywhere at any time write to **GEO. P. ROWELL & CO.,** No 10 Spruce St., N. Y.

DO you want fine **ITALIAN** bees and queens? Then send your order to **D. E. JACOBS,** Longley, Ohio. Catalog free. 5-92-2t

50, 8-frame, Langstroth hives, in the flat, all complete, \$1.00 each.
Wm. IDEN, Etna Green, Ind.

Do You Want

Good, gentle and prolific bees? Then get an Albinio or white-banded Italian queen of **A. L. KILDOW, Sheffield, Ill.** Catalog free. 3-92-4t

—If you are going to—

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

MUTH'S

Honey - Extractor,

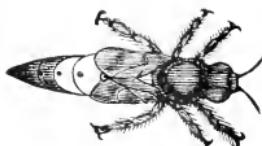
Square Gloss Honey-Jars, Tin Buckets, Bee-Hives, Honey-Sections, &c., &c.
Perfection Cold-Blast Smokers.

Apply to **CHAS. F. MUTH & SON,**
CINCINNATI, O.
P. S.—Send 10-cent stamp for "Practical Hints to Bee-Keepers." 2-88-tf

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.



BEES FOR SALE.

Colonies, nuclei,

and queens at living rates. Send for circular to
C. C. VAUGHN & CO., Columbia, Tenn. 2-92-tf

Please mention the Review.

EARLY CARNIOLAN QUEENS.

From May 20th to June 20th, \$1.50 each. After the 1st of June there will be two breeding yards, one for Carniolans and one for Italians, and queens of either variety will be sold as follows: Untested queens, 75 cts. each; three for \$2.00; six for \$3.00. After June 20th, tested queens of either variety, \$1.00 each. For further particulars send for circular. 1-92-tf

JNO. ANDREWS, Patten's Mills, N. Y.

THE CANADIAN

Bee Journal,

Poultry Journal,

EDITED BY D. A. JONES.

ED-ED BY JNO. GRAY.

\$1.00 a Year.

\$1.00 a Year.

These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike, valuable to expert or novice. Both illustrated and improved. Under new management. Address BEETON, ONT., Canada.

Bee Hives, Sections, Etc.

We make the best goods and sell them cheap. Our sections are far the best in the market.

Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.
G. B. LEWIS CO.,
11-91-tf
Watertown, Wisconsin.

Beauty,



Gentleness,



Business.

Send for circular and learn what others say about the five-banded Italian Bees. Queens \$1.00 six for \$5.00. Queens ready to mail June 1st.

J. F. MICHAEL,

German, Darke Co., Ohio.

12-91-8t

Names of Bee - Keepers.

TYPE WRITTEN.

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically (in the largest States). and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.00 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly, in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. The former price was \$2.50 per 1000, but I now have a type writer, and, by using the manifold process, I can furnish them at \$2.00.

W. Z. HUTCHINSON, Flint, Mich.

It Pays

To order the best made goods. For fine sections, foundation, perforated zinc, queen-excluders and the best hive for comb honey now before the public, order of Dr. Tinker.

Prices Greatly Reduced.

For catalogue and prices, address

Dr. G. L TINKER,

5-92-2t
New Philadelphia, Ohio.

Please mention the Review.

Good Queens Cheap.

300 tested Italian queens, raised last season, for sale at \$1.00 each; \$10 per doz. A few hybrids at 25 cts. They will be sent about June 15th to 25th, or later if desired. Have orders booked now and send money when you want them. My bees have been

Bred for Business

and these are a bargain. Nuclei and full colonies at very low prices. Send 25 cts. for sample, by mail, of the

UTILITY BEE ESCAPE.

Thoroughly tested, practical and cheap. It cleans the bees out and they stay out. Any one can make it. Get a sample and make your own. **J. A. GREEN,**
2-92-tf
Dayton, III.

Please mention the Review.

Barnes' Foot and Hand Power Machinery.



This cut represents our Combined Circular and Scroll Saw, which is the best machine made for Bee Keepers' use in the construction of their hives, sections, boxes, etc.

8-91-16t

MACHINES SENT ON TRIAL.

FOR CATALOGUE, PRICES, ETC.,

Address W. F. & JNO. BARNES CO., 384 Ruby St., Rockford, Ills.

Root's D. T. Hive

AT HIS PRICES. Sections 4¹/₄ x 4¹/₄ x 1⁷/₈, snow white, per 1,000 \$3.75; cream colored \$3.00. Comb Foundation. Smokers and Aparian Supplies of all kinds. Circular free. Save freight and order early of **GEO. W. COOK**, Spring Hill, Johnson County, Kansas. He can also furnish yellow Italian queens, bred for business, and warranted, at \$1.00 each, or six for \$5.00. Ten per cent. off on all orders received before May 1.

Please mention the Review. 12-91-6t

Please mention the Review

DON'T SEND

Across several States after Goods that can be bought just as cheaply near home, but write to

GREGORY BRO'S & SON,

Ottumwa, Iowa, for their large, 12-page, illustrated catalogue of everything needed in the apiary—Hives, Sections, Shipping Cases, Smokers, Foundation, Bees, Queens, Bee Veils, etc., etc., etc.

Dovetailed Hive

No. 1, eight thick-top-bar frames, division board, super section holders, follower, wedge, tin separators, sections, foundation starters, flat cover, painted, \$1.50. Five hives, in the flat, no inside furniture, \$3.25.

NICE WHITE SECTIONS

At \$3.50 per 1000; cream sections, \$3.00; No. 2, \$2.00.

BEES FOR SALE.

50 colonies of Italian bees for sale at \$5.50 per colony; or \$5.00 each if ten or more colonies are taken. Tested Italian queens in May, \$1.50; in June \$1.25.

1-91-1f J. M. LINZIE, Rochester, Mich.

Tested

Queens are usually sold for \$2.00. I will explain why I wish to sell a few at less than that. As most of my readers know, I re-queen my apiary each spring with young

Queens

From the South. This is done to do away with swarming. If done early enough it is usually successful. It will be seen that the queens displaced by these young queens are never more than a year old; in fact, they are fine, tested, Italian queens *right in their prime*; yet, in order that they may move off quickly, and thus make room for the untested queens, they will be sold for only

\$1.00.

Or I will send the REVIEW for 1892 and one of these queens for only \$1.75. For \$2.00 I will send the REVIEW, the queen, and the book "Advanced Bee Culture." If any prefer the young, laying queens from the South, they can have them instead of the tested queens, at the same price. A discount given on large orders for untested queens. Say how many are wanted, and a price will be made.

I have about a dozen mated Italian queens that I will sell at 25 cts. each.

W. Z. HUTCHINSON, Flint, Michigan.

5 - BANDED, Golden Italian Queens.

Increase your honey crop by improving your bees. Untested queen, three-banded, 90 cents; five-banded, \$1.00. Tested, three-banded, \$1.25; five-banded, \$1.50. A full line of bee keepers' supplies, cheap. Send for catalogue. 5-92-1f

CHAS. H. THIES, Steeleville, Ills.

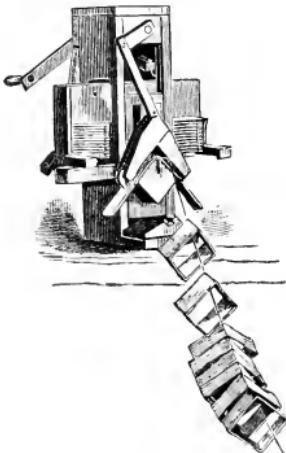
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Early Golden, UNTESTED QUEENS, \$1.00.
 Large, fine, gentle, and bred for business. Ready to mail—6 for \$4.50; one dozen for \$8.00. Fine tested, reared last year, \$1.50; select, \$2.00. A few breeders, Italian or golden, \$3.00 to \$5.00. All reared by the Doolittle method. Reference, by permission, F. H. & E. H. Dewey, Westfield, Mass. Money order office, Daytona. 3-92-tf

J. B. CASE, PORT ORANGE, FLA.

It Does Both at the Same Operation. All you have to do is to Turn the Crank, and the Sections roll out at the Rate of Thirty a Minute.

PHILO'S AUTOMATIC SECTION FORMER AND GLUER.



PRICE \$3.00.

E. W. PHILO, Half Moon, N. Y.

BIG OFFER!

Now is the time to get your supplies cheap. **FREIGHT PREPAID** on all supplies sent anywhere within 100 miles of Jackson; and on large orders it will be paid still farther. Who does this? Soper the hustler.

Root's Dovetailed Hives, all kinds of Brood Frames, No. 1, white, V groove sections, \$3.00; No. 1, \$2.00, Basswood shipping Crates, No. 1 Bee Veils, 35 cts., Clark Smokers at wholesale and retail. Warranted queens in May, \$1.00; in June, 75 cts., Foundation, etc., in stock. Special prices to dealers. New list free. 2-92-tf

W. D. SOPER,
 Box 1473, Jackson, Mich.

If You Wish Neat, Artistic

PRINTING,

Have it Done at the Review.

50

Cents will buy a good, two-story, L. hive. Shall we send you one? Send a statement of what you want and we will give you prices. Send for price list. WM. BRIGHT, 1-92-12 Mazeppa, Minnesota.

NEW YORK CITY

Is the best located point in the East for the shipment of goods. As we sell as low as **ANY ONE**, you should have our circular. **ESPECIALLY** low prices on Italian bees and queens. 1. J. STRINGHAM, 12-91-12t 92 Barclay St., New York City.

SIX MONTHS

for only 15 cents.

White Mountain Apiarist.

This offer seems to have hit the right chord. Everybody wants to see what the APIARIST is like. Try it. WHITE MOUNTAIN APIARIST, Groveton, N. H.

White Poplar Sections.

We have New Steam Power, and New Buildings, and are now ready to furnish White Poplar Sections, Clamps, Crates and Wood Sides at short notice. Workmanship, Quality and Price unsurpassed. Send for sample and price list.

PRIME & GOVE,

1-90-tf Bristol, Vermont.

SOLID GOLD

He sat in his apiary at noonday,
 He was lonely, gloomy and sad;
 The bees were buzzing about him,
 And he was hopping mad.
 Not an ounce of surplus honey,
 Not a dime in his pocket for bread,
 But the black bees kept on buzzing
 About the old man's head.
 At last, in despair, he shouted;
 "I would that I were dead!"
 Then came the sound of sweet music—
 He stood as one in a trance—
 The birds sang

"BUY THE W. V. M. ITALIANS,
 And then of joy you'll dance." 2-92-12t

Virgin queens, 40 cts. each. Untested, \$1.00; tested, \$2.00; select tested, \$3.00; select breeding queen, \$4.00. Untested queens ready May 20. W. V. MOREHOUSE, LAFAYETTE, IND.

Italian Queens

And **BEES by the POUND**. The finest honey gatherers in the land. Tested queens, \$1.50 each; select tested, \$2.00; untested, \$1.00, each, or \$9.00 doz. Queens ready to ship now. Satisfaction and safe arrival guaranteed. Give me an order and see what nice queens you will get. 4-92-6t

J. W. TAYLOR, Ozan, Ark.



SPRAY YOUR FRUIT TREES AND VINES

Wormy Fruit and Leaf Blight of Apples, Pears, Cherries, Grape and Potato Rot, Plum Curculia prevented by using

EXCELSIOR SPRAYING OUTFITS.

PERFECT FRUIT ALWAYS SELLS AT GOOD PRICES. Catalogue showing all injurious insects to Fruits mailed free. Large stock of Fruit Trees, Vines, and Berry Plants at Bottom Prices. Address W. M. STAHL, Quincy, Ills.

ON HAND NOW.
THE MOST COMPLETE STOCK
OF BEE HIVES AND SUPPLIES
IN THE NORTHWEST.

W. H. PUTNAM,
5-92-3t RIVER FALLS, WIS.

Special Mated

queens. They are reared under the swarming impulse, in our Texas apiary, and mated to very yellow drones. The queens and drones are bred from the very best five-banded

GOLDEN ITALIAN

stock. These bees are the gentlest, best workers and most beautiful bees known. One queen in May, \$1.10; six for \$5.50. All queens warranted purely mated, and safe arrival and ENTIRE SATISFACTION guaranteed. Circular free.

S. F. & I. TREGO,
1-92-6t Swedona, Illinois.

Bees, Hives, Sections, Smokers,
Foundation, Extractors, Shipping Cases, Etc., are sold by J.

C. SAYLES, Hartford, Wis.
Send for Price List.

2-92-1f

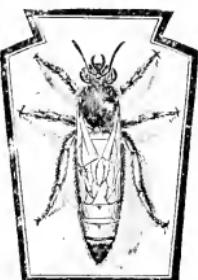
KEYSTONE

APIARY.

Queens in June; in July.
Select, \$3.50 \$3.00
Tested, 2.50 2.00
Fertile, 1.50 1.00
6 " 8.00 5.00
Send for Circular.

W. J. ROW,
Greensburg, Pa.

12-91-7t Mention the Review



A Field Clear

Of other races is where I breed the 5 and 3-banded **Golden Italians**. Untested queens in Apr. and May, \$1.00; six for \$5.00. Tested, \$1.75; three for \$4.50. Select tested, three banded, \$2.50; five-banded, \$3.00. Two-frame nucleus with tested queen, \$3.00. Four-frame nucleus with tested queen, \$4.00. I can also furnish the eggs of fancy poultry.

4-92-tf

A. SIDLER, Thayer, Mo.

Please mention the Review.

FREE

Would you like to see a sample, free, of my eight-to-the-foot, **one - piece**, white poplar

SECTIONS?

Then send your name on a postal and get one. I sell them for \$3.25 per 1,000; or for \$3.00 when 2,000, or more, are taken.

5-92-1t

O. H. TOWNSEND, Alamo, Mich.

Please mention the Review.

Bee Hives and Section Boxes.

Simplicity, Langstroth-Simplicity, Standard Langstroth, Dovetailed and Champion Chaff Hives, Supers, One Piece Sections and Shipping Cases, Foundation, Smokers, etc., etc. Send for 16 page Circular.

1-92-tf PAGE & KEITH, New London, Wis.

Please mention the Review.

SECTIONS, SECTIONS, SECTIONS,

Foundation Foundation Foundation,
SMOKERS, SMOKERS, SMOKERS,

and **ALL** other supplies. Send for catalogue.

J. STAUFFER & SONS, Nappanee, Ind.

12-91-9t

Please mention the Review.

Cheap Freight and Quick Transportation.

Being located at the most central point of railroad and express companies enables us to furnish bee keepers with supplies at less cost to themselves than any house in the country. We furnish everything needed in the apiary, as low as the lowest and as good as the best.

COOK'S COMPLETE HIVE combines all the most approved methods of hive making. It is a complete arrangement for out-door wintering and is equally well adapted to producing comb or extracted honey. Send for circular. Fine lot of **Bees for Sale** cheap.

J. H. M. COOK, (SUCCESSION TO KING & ASPINWALL) 78 Barclay St., New York City.

BUY CHEAPLY, BUT BUY WELL.

It pays to buy reliable goods. Poor goods are dear at any price. We sell **CHEAPLY** and our **Bee Hives, Sections and all Supplies** are **FIRST CLASS**.

Catalogue, price list and sample copy of the **American Bee-Keeper** sent free. Address

THE W. T. FALCONER Mfg. CO.,
Jamestown, N. Y.

Please mention the Review.

A Good Type Writer CHEAP.

For the past three months I have been using on Odell type writer. It is the best, low priced machine with which I am acquainted. Its work is the equal of that done by any type writer. I doubt if so great speed can be attained as is the case with the keyed machines, but I can write more rapidly and easily than I can with a pen, and I presume that those receiving my letters can read them with greater ease and certainty. The machine is simple, easy to learn and not likely to get out of order. There are two styles, one costing \$15.00, and the other \$20.00. The Odell Co. has asked me to take the agency for the sale of the machines, and I shall be glad to send specimens of writing and illustrated, descriptive circular to any one thinking of buying a type writer. W. Z. HUTCHINSON, Flint, Mich.

GOLDEN ^{ITALIAN} QUEENS.

My apiary is located on the broad prairie, 3 miles from other bees; hence, not one queen in 100 will be misnamed. Warranted, in May 75 cts. each; two for \$1.25. Tested, \$1.00; two for \$1.75. After June 1st, warranted queens 65 cts. each, or two for \$1.00.

C. B. BANKSTON & CO.,
5-92-1t Thorndale, Texas.

The Lone Star Apiary Sells



QUEENS

As cheaply as anybody. Untested queens, after June 1st, 75 cts. Six for \$4.20. Tested queens, after June 1st, \$1.00; six for \$5.00. Nuclei, 75 cents per frame. Langstroth size. Price list free on application. Correspondence solicited. Discounts given on large orders; write for special prices. Remit by Pacific Express money order, P. O. money order, or postal note. Satisfaction and safe arrival of queen's guaranteed.

OTTO J. E. URBAN,
3-92-1f Thorndale, Texas.

1852.

REDUCTION ON THE PRICE OF

1891.

Langstroth on the Honey Bee.

(REVISED.)

PRICE BY MAIL, \$1.40; BY EXPRESS OR FREIGHT WITH OTHER GOODS \$1.25.

By its copious indexes, by its arrangement in numbered paragraphs, including reference numbers on any question in bee culture, any information can be instantly found. This book is the most complete treatise on bee keeping yet published. A FRENCH EDITION JUST ISSUED.

1878. DADANT'S COMB FOUNDATION. 1891.

More than Ever. Better than Ever. Wholesale and Retail.

Half a Million lbs. Sold in 13 Years.

Over \$200,000 in Value.

It is THE BEST, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year. Samples, Catalogue, Free to All. Send your Address.

We also make a specialty of Cotton and Silk Tulle of very best grade for bee-veils. We supply A. I. Root and others. 7,000 Yards just received. Prices Very Low. Samples Free.

Smokers, Honey Sections, Extractors, Tin Pails for Honey, Etc. Instructions to Beginner with Circulars Free.

4-92-12

Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

The Golden, Yellow, Italian

JUNE 10, 1892



THE BEE-KEEPERS'
REVIEW
Published Monthly,

At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line. Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:—

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

CLUBBING LIST.

I will send the REVIEW with—	
Gleanings,	(\$1.00) \$1.75.
American Bee Journal,	1.00) 1.75.
Canadian Bee Journal, . . . . .	.75) 1.65.
American Bee Keeper, . . . . .	.50) 1.40.
Missouri Bee Keeper, . . . . .	.50) 1.40.
Bee Keepers' Guide, . . . . .	.50) 1.40.
Apiculturist, . . . . .	.75) 1.65.
Bee-Keepers' Magazine, . . . . .	.50) 1.40.



For Simplicity and Durability
Bingham Patent Smokers,
AND
BINGHAM & HETHERINGTON
Honey Knives,
ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,	3½ inch,	2.00
Conqueror Smoker,	3 " " " " .	1.75
Large Smoker,	2½ " " " " .	1.50
Extra Smoker,	2 " " " " .	1.25
Plain Smoker,	2 " " " " .	1.00
Little Wonder Smoker, 1½ " " " " .	65	
Bingham & Hetherington Knife,	1.15	

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINCHAM & HETHERINGTON,

1-90-tf.

Abronia, Michigan



Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa.,

One of the Largest Bee-Hive Factories

in the East, fully equipped with the latest, improved machinery? They are now prepared to send out the latest styles of

Hives, Sections, Crates and Foundation.

All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue.

2-91-tf

OLIVER HOOVER & CO., Riverside, Pa.

Please mention the Review.

Western BEE-KEEPERS' Supply Factory.

Largest Business of the kind in the West.



We manufacture Bee-Keepers' supplies of all kinds, *best quality at lowest prices*. Dovetailed Hives, Sections, Foundation, Extractors, Smokers, Crates, Veils, Feeders, Clover Seeds, Buckwheat, etc. Imported Italian Queens, Queens and Bees. Sample Copy of our Bee Journal, "The Western Bee-keeper," and latest Catalogue mailed Free to Bee-Keepers. Address JOSEPH NYSEWANDER, DES MOINES, IOWA.

4-92-tf Please mention the Review.

Progressive • • • Bee-keeper • • •

Is not dead, but sometimes a little late, it is always filled with valuable ideas. It is up with the times. Its editor is a practical bee-keeper. To get acquainted with you, we will send it to you **Three Months for Five Cents**. Monthly, 50 cts. a year. Sample copy free.

SPECIAL. For \$1.15 will send one warranted Queen and the Progressive Bee-keeper one year to introduce it. Address

PROGRESSIVE BEE-KEEPER,
Unionville, Mo.

Bee Hives and Section Boxes.

Simplicity, Langstroth-Simplicity, Standard Langstroth, Dovetailed and Champion Chaff Hives, Supers, One Piece Sections and Shipping Cases, Foundation, Smokers, etc., etc. Send for 16 page Circular.

1-92-tf PAGE & KEITH, New London, Wis.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

Have you heard that Oliver Hoover & Co. have built, at Riverside, Pa.,

One of the Largest Bee-Hive Factories

in the East, fully equipped with the latest, improved machinery? They are

now prepared to send out the latest styles of

Hives, Sections, Crates and Foundation.

All kinds of bee-keepers' supplies always on hand. Their location will enable them to ship goods by direct line to more points than any other manufacturer, which will give the advantage of **Low Freight Rates** and quick transportation. Send for free illustrated catalogue.

2-91-tf

OLIVER HOOVER & CO., Riverside, Pa.

Please mention the Review.

A SWARM OF BEES

As it issues from the hive is certainly worth \$2.00. To lose it, or mismanage it, *may* mean a loss of \$5.00. This is easily avoided by having a thorough knowledge of how to manage bees when they swarm. "ADVANCED BEE CULTURE" has one entire chapter devoted to "Hiving Bees." Plain, simple directions are given how to manage in small apiaries, in large apiaries, when queens are clipped or unclipped, when several swarms issue at the same time, etc., etc. Remember, too, that this is only one chapter out of thirty-two.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

ITALIAN QUEENS AND SUPPLIES FOR 1892.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88 tf.

Augusta, Georgia.

GOLDEN

HONEY QUEENS

Bred from best honey gatherers in America. Beautiful, gentle, prolific and hardy.

TRY ONE.

Warranted \$1.00 each: six for \$5.00. Select tested and breeding queens after July 1st. Safe arrival and satisfaction guaranteed. Prompt shipments. Circular free.

SPECIAL.

For \$1.15 will send one warranted queen and Progressive Bee-keeper one year to introduce 6-924f E. F. QUIGLEY, Unionville, Mo.

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350 Colonies: 1,000,000 Sections: Hives, Smokers, Queens, Etc. Send for price list to E. T. FLANAGAN, Belleville, Ill. 12-91-67

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EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price \$1.00. Mailed, postpaid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address ROWELL'S ADVERTISING BUREAU, 10 Spruce St., N. Y.

Please mention the Review.

BYELLOW EXTRA EXCELLENT S
Italian queens Tested, \$1.50 Two - Framed
Forsale in June untested, \$1.00 nucleus with
at Chemango | Order Early | Queen, \$2.00.
Valley apiary. | Send for cir. | Don't pass by

Mrs. OLIVER COLE, Sherburne, N. Y.
4-92-3t *Please mention the Review.*

**DR. J. W. GRENshaw,
Versailles, Ky.,**

OFFERS for sale untested QUEENS in June at \$1.00 each. After June at 75 cts. Imported or American mothers. Contracts solicited. Also Celery Plants July to Sept., at \$2.00 per 1000. Also any of Root's goods. 6-92-4t *Please mention the Review.*

J. FORNCROOK & CO.



WILL FURNISH YOU THE

"BOSS" ONE-PIECE SECTION

AS CHEAP AS THE CHEAPEST

And the **BEST** in the Market.Also **DOVETAILED HIVES**
and other **SUPPLIES.**

Write for Price List.

WATERTOWN, Wis., Jan. 1, 1892. 12-91-12

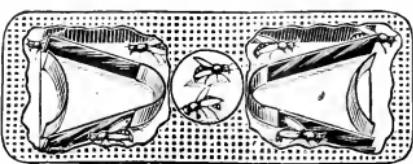
The queen I got of you has more brood than any other colony I have.—A. Miller, Trail, Ohio.

Our 5-Banded Italians

Are the bees for business, as well as being gentle and beautiful. One warranted queen, \$1.00; six for \$5.00. Safe arrival and entire satisfaction guaranteed.

Free—THE AMATEUR BEE-KEEPER, 52 pages, price 25 c. A copy free to the one sending the most money for queens each day.**S. F. & I. TREGO,**
1-92-61 Swedona, Illinois.**ITALIAN****QUEENS**
& NUCLEI.

Untested, 75c. Tested, \$1.00. Extra selected, \$3.00. Six queens for the price of five. Three-frame nucleus, with untested queen, \$3.50.

H. FITZ HART,
6-92-12 Avery, La.**HASTINGS, "Lightning" BEE ESCAPE.**

Send for a sample of Hastings, "Lightning" Bee Escape and you will be convinced that it is the best and most practical escape yet produced. It will clear the supers in a short space of time—from 2 to 4 hours—and it is impossible for it to become clogged, as the bees cannot return. Each escape is accompanied by directions and guaranteed to do as represented. 20 cts. each by mail; per doz. 2.25. Electrolyt, furnished free to dealers for us, in their catalogues. Write for discounts. **M. E. HASTINGS,**
4-92-61 New York Mills, N. Y.

Take Notice!

If you are looking for the bees that give the most profit, and are the most gentle, try the

ALBINO.

I can also furnish the golden Italian, but my preference is the Albino. Send for circular and price list and see what others say of them and how cheap I sell them. I also manufacture and deal in **Hives, Sections, Foundation, Extractors** and other aparian supplies.
S. VALENTINE,
5-92-21 Hagerstown, Md.

ONE Punic queen and Am. Api. 1 yr. 2.50
Golden Carniolan " " " " 2.00
Beautiful Italian " " " " 1.00
Eight-page catalogue free. **H. ALLEY,**
5-92-21 Wenham, Mass.

For \$1.50 I will send the Review for 1892 and a fine, young, laying, Italian queen.

Queen alone, 75 cts. For \$1.75 I will send the Review, the queen and "Advanced Bee Culture." Tested queens, \$1.00. The Review and a tested queen \$1.75

QUEENS**REVIEW**

A discount on large orders. **W. Z. Hutchinson, Flint, Mich.**

SOLID GOLD

The past 17 years of careful breeding have wrought great changes in the Italian bees as regards their color and honey gathering qualities. I am now rearing queens, in accord with Nature's best way, that are yellow almost to the tip, and have a record of 2 1/2 pounds of comb honey from a single colony one season.

After June 10 I can furnish untested queens at 65 cts.; tested at \$1.50; select, breeding queen, \$4.00. Send for free sample of bees and be convinced. Make money orders payable at Lafayette, Ind. Address W. V. MOREHOUSE.

Octagon, Ind.

4-92-12 J. W. Taylor's strain of Italians

Beats the World

to gather honey. 224 pounds from one hive. Unsexed queens 75 cts. each; six for \$4.00; twelve for \$7.00. Tested. \$1.25; six for \$7.00.

Satisfaction and safe arrival by mail guaranteed.

4-92-61 J. W. TAYLOR, Ozan, Ark.

THE CANADIAN

Bee Journal,

Poultry Journal,

EDITED BY D. A. JONES. ED'TD BY JNO. GRAY.

\$1.00 a Year.

\$1.00 a Year.

These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike valuable to expert or novice. Both illustrated and improved. Under new management.

Address BEETON, ONT., Canada.

Bee Hives, Sections, Etc.

We make the best goods and sell them cheap. Our sections are far the best in the market.

Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

G. B. LEWIS CO.,

11-91-1f

Watertown, Wisconsin.

Beauty,



Gentleness,



Business.

Send for circular and learn what others say about the five-banded Italian Bees. Queens \$1.00 six for \$5.00. Queens ready to mail June 1st.

J. F. MICHAEL,

German, Darke Co., Ohio.

12-91-8t

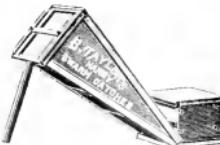
Names of Bee-Keepers.

TYPE WRITTEN.

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically (in the largest States), and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.00 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly, in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. The former price was \$2.50 per 1000, but I now have a type writer, and, by using the manifold process, I can furnish them at \$2.00.

W. Z. HUTCHINSON, Flint, Mich.

The Terrors of Swarming Time Changed to



pleasant pastime by the use of B. Taylor's Handy Swarm Catcher. Patent allowed April 23, 1892. 1000 taken by one party on May 19. One order shipped to Scotland May 23. Sure to come into general use. Price \$3.00 each, nailed and painted. Six, in the flat, \$15. Our catalogue tells all about it. Write for it. We make the best bee hive on earth. WESTERN M'FG CO.,

Spring Valley, Minn.

Improved L. hive painted \$1. Alsike, clover, Japanese buckwheat, cheap. Sample 5 cts. 2000 Sections, \$5.50. L. Clark, Wiscoy, Minn.

Good Queens Cheap.

300 tested Italian queens, raised last season, for sale at \$1.00 each: \$10 per doz. A few hybrids at 25 cts. They will be sent about June 15th to 25th, or later if desired. Have orders booked now and send money when you want them. My bees have been

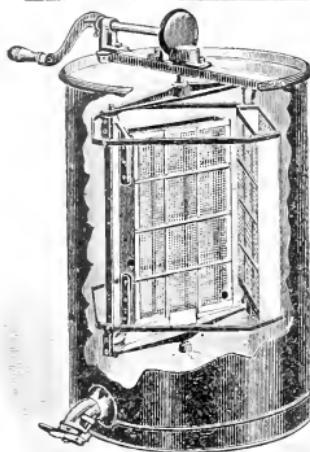
Bred for Business

and these are a bargain. Nuclei and full colonies at very low prices.

J. A. GREEN,

Dayton, Ill.

Please mention the Review

A Grand Success.

Mention Review.

New Cowan Reversible
HONEY EXTRACTOR.

May be Reversed Without Stopping the Machine.

Strong, well made in every respect, light, and of convenient size. The can is but little larger than that of the Novice. The gear is beveled and covered by an iron shield, and the crank out side the can. Frank McNay, of Mauston, Wis., a bee-keeper who produces tons and tons of extracted honey, says of it: —

"After carefully examining and trying the Cowan extractor, I have failed to find a weak part, and I do not hesitate to say that it is the best extractor made, both in regard to convenience and durability, and I shall replace all of my five machines with the Cowan as soon as possible."

It is endorsed also by J. F. McIntyre, an extensive extracted honey producer of California; by W. Z. Hutchinson, Dr. C. Miller, and others.

Price all Complete, Jappanned and Lettered, for L. Frame, \$10.

A. I. ROOT, Medina, O.

50, 6-frame, Langstroth hives, in the flat, all complete, \$1.00 each.
Wm. IDEN, Etha Green, Ind.

QUEENS, DRONES, NUCLEI.

We are sending them PROMPTLY by mail and express and guarantee safe arrival ANYWHERE in the U. S. Two-frame nucleus with queen, \$2.25.

Root's Dovetailed Hive,

Smokers, Foundation, etc. Send for price list. Italian queens, selected, tested breeders, \$4.00; tested, \$2.00 or three for \$5.00; untested, \$1.00; six for \$5.00 or \$9.00 per doz. Make money orders payable at Clifton. COLWICK & COGWICK,
Norse, Texas.



Send for circular and testimonials, and read what others say of them.
PRICES: Each, by mail, with full instructions, 20 cts. Per doz., \$2.25. If, after three months' trial, they are not found superior to all other escapes, and satisfactory in every way, return them and we will refund your money. For sale by dealers.

4-92-4f Mention Review.

FOR SALE,Largest Bee Supply
Business in Canada.

Reputation all Over America.

A Snap for some enterprising business man or firm. Good reasons for selling; only \$2000 or \$3000 required. Send for particulars. Address

DR. B. S. CHEFFEY, Beeton, Ont.

Do You Want

Good, gentle and prolific bees? Then get an Albino or white-banded Italian queen of A. L. KILDOW, Sheffield, Ill. Catalog free. 3-92-4f

Porter's Spring Bee-Escape

Saves temper, time and bees.

PROF. COOK says: "No bee-keeper can afford to be without them."

WM. M'EVOY, foul brood inspector of Ont., Can., says: "They should be used in every bee yard in the whole wide world."

THOS. PIERCE, Pres. Eastern N. Y. B. K. A., says: "The time will soon come when all bee-keepers will use them."

Send for circular and testimonials, and read what others say of them.

R. & E. C PORTER, Lewistown, Ill.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V. FLINT, MICHIGAN, JUNE 10, 1892. NO. 6.

The special topic of the next issue is
Smoke and Smokers.

How to Manage Bees After the Queens
Have Been Removed to
Prevent Swarming.

R. C. AIKIN.



EIGHT days after the queens were removed, we must again examine each colony and cut out the queen cells. If they were removed the seventh day there would still be unsealed brood; and since it is a case of "life or death," queen cells will be built on such larvae as never make *queens*, but nuisances that will frustrate our plans. The ninth day is as good as the eighth; the tenth will answer, although some queens will hatch on that day. These newly hatched queens will rarely if ever lead out a swarm until the next day, but with queens hatching, or just ready to hatch, there is more excitement. This we would avoid, so we limit the time of removal to the eighth and ninth days. Commencing on the eighth day, we remove every queen cell from each colony, leaving the bees hopelessly queenless. It will answer to

leave one cell and allow the bees to requeen themselves, or we can save choice cells from choice colonies, and when working colonies that are not as good as we desire, give each a choice cell instead of leaving any of their own construction.

The first objection to these plans is that the cells are built under circumstances of enforced queenlessness, hence many of the cells are from three and four-day larvae, as is indicated by their hatching on the tenth day; we don't want such queens.

The second trouble is that the swarming fever will not be entirely off yet, and some colonies will make a feeble attempt at swarming when the young queen goes out to mate. In two year's experience with nearly 200 colonies I have not had a colony cast a full swarm with a mating queen. Perhaps one in ten or fifteen make the attempt; and of the young queens thus accompanied by small swarms, perhaps one-half will leave with the bees. At this time, however, the swarming effort is weak; it comes just on the spur of the moment as the queen takes wing, and, coming unexpectedly, all of the bees don't "catch on" until the queen has left the hive. Fully half, if not two-thirds, of such queens, after flying about a few minutes, return home. If they do get away, there is no great loss as the swarms are small.

For these reasons, instead of re-queening in this way, I leave the colony hopelessly queenless for four or five days before giving a cell. If left a week or more, fertile workers begin to appear, and they are perfect nuisances.

About ten days previous to the time for requeening, I go to some choice colonies that were allowed to retain their queens for this purpose, and remove what cells they may have started. From these I select those not far advanced—simply cups containing small larvae—fasten them to a stick or upon a comb and put them in some queenless colony for completion. When they are developed, and four or five days have elapsed since the other cells were clipped, I take these cells and place one in each colony. The giving of these cells may seem like quite a task, but it takes only a short time. I place them in a d sh, cover them to protect them from the heat or cold, pass along the rows of hives, raise the supers and slip a cell in between the brood combs. The cells might be put in the supers only that one or two sections would be spoiled. Perhaps it would be better to use Doolittle's method of rearing the queens, and just as they hatch let one run into the top of each hive. I have requeened some in much this way.

The requeening being accomplished, our whole time is now devoted to looking after the honey. While cutting out cells and requeening we have, as we went along, added fresh supers as needed and taken off any finished ones. If the flow be fair to good the bees ought to now be finishing up the sections very rapidly. For several days now the bees have had nothing to do except to bring in honey. We go from hive to hive, removing finished supers, putting on new ones if needed, or changing the position of those already on if it is necessary. We may have previously placed a fresh super at the bottom, with two or three full, but unfinished ones on top of it; should they not be finishing as we think they ought, we put the one the least worked on top; or whatever arrangement, in our judgment of the prospect of a continuance of the honey flow and the strength of the colony, is best to get the honey finished the quickest and best. This work we do from time to time, and from apiary to apiary, and we can't be too careful.

The production of a first class article of comb honey requires a full and practical knowledge of the business, a clear judgment, and much care.

Of course, the brood chambers are now full of honey. Almost the whole force is concentrated in the supers. Twenty-one days after the queen was removed the last

bees were hatched. If the colony was requeened without waiting the five days, the young queens will now be just about ready to lay. The last plan given will delay the laying perhaps a week. After the twenty-first day from date of beginning the colony begins to decrease in strength. When the young queen begins to lay, the honey begins to move from the brood chamber. As fast as room is needed, up goes the honey into the super. If honey still comes from the fields, the super work goes on as rapidly as ever. Should the bees be making only a living, enough honey will be going up from below to finish up many sections. That is a cheap way of "feeding back to finish sections."

As the flow closes and the colony decreases in strength, we do not add more supers but keep taking off each super as finished and closing down. If one wishes, one may finish up by taking the tail end of the flow in the extracted form, having regulated the supply of sections so as to have all finished and off.

The moving of honey from the brood chamber to make room for the brood helps out in this matter.

In requeening, some cells will fail. Some queens, too, will fail in mating. Having introduced cells of which we knew almost the exact age, we can determine very nearly the time to expect the young queens to be laying. Most queens will lay in nine days from date of hatching. A very few will over-run this time. We must also look carefully to this matter. Our record will show the date of dequeening, the clipping of cells, the introducing of cells or queens, and all such. If we have worked regularly, as we should, a very little time serves to see that colonies have requeened "O. K."

The expert apiarist can almost tell from outside appearances; as, for instance, the amount of honey going into the supers. The colonies having no queen, and hopelessly so, begin to be listless. The honey does not move up from the brood chamber. All these little signs, familiar to an expert apiarist, will help to determine the condition. To make sure, however, we again look into the brood chamber. Often just a peep will tell the story, especially if the queen has been some days laying. Often we see the queen herself, as she runs down the combs. This examination should not be delayed too long, for a week to ten days of queenlessness under these conditions will develop fertile

workers. I think it hardly pays to requeen any queenless stocks that are found now. About this time our honey flow is over for the season: rearing of queens and all such outside of the honey flow is bothersome and disagreeable business. We have anticipated this, and made our increase previously by the nucleus plan. Colonies that have requeened "O. K." need no further looking into the brood chamber. Those that have failed can be torn up root and branch, and several of them hived together with some poor queen, or a good one if we have one to spare, and allowed to forage through the fall. If they are hived on starters, they may make quite a little wax, and possibly some honey, and can be destroyed when cold weather comes, or so soon as the prospect of getting some honey is past.

While there is yet a drip of honey coming in, we endeavor to get all the honey cleaned up, (i. e., off the hives and into the honey house) shutting all colonies down to the brood chamber. If we can get this done before robbing begins, so much the better. If not, we do it as best we can, doing a little at a time, on cool days. The flow begins about June 15 or later and is over in from forty to sixty days, so we have but little to do in the apiary after Aug. 15 or Sept. 1st.

With the closing of the flow perhaps some of the nucleus colonies have not built up sufficiently to winter. If so, the weak and light ones can be united. This we do in preference to trying to winter weak colonies. We want each colony to go into winter with plenty of stores (about thirty-five to forty pounds) and just a fair force of bees. We don't object to boarding a force of workers when we have the prospect of a honey flow three or four weeks ahead, but we don't want to board any more than necessary after the flow is over. This system of management accomplishes the desired result.

We have now given you our system of management. No doubt it has its faults. It, too, has its advantages. It suits our location and gives splendid results. Were our honey flow a little later, or a little earlier, or a little shorter, say like a basswood flow, I would change the details somewhat. Should the flow be of but ten or fifteen days duration, I would remove queens before the flow opened.

The success of the apiarist lies in having only strong colonies to gather honey, the stronger the better. Concentrate that

strength, instead of running the same bees in two hives, run them in one, and it brings in the surplus. It takes but few bees to run a brood chamber, and make a colony sufficient to winter over, but three to five times as many are needed before they *can* and *will* do good work in the supers. This is not so applicable to producing extracted honey, but I have enough faith in it to use the same system in producing the extracted.

The honey is brought from the out apiaries at the close of each day's work. To remove the supers, we have usually smoked the bees out and brushed off with a big wad or wisp of grass.

We have used some escapes with success and will adopt that system in future.

When we arrive with a load of honey it is piled up just as it comes from the hives. No opening of supers during the honey season; 'tis much easier and cheaper to have enough supers to hold the entire crop and let the honey remain in the supers until we are ready to clean and crate.

LOVELAND, Col.,

May 20, 1892.

Twenty Colonies in one Cluster!—A Novel Method of Transferring.

C. B. BANKSTON.

LAST SPRING I had a great deal of transferring to do, and I tried nearly every method of which I had read, when I happened to hit upon the following, which gives excellent results where there are many colonies to transfer.

On this occasion there were twenty colonies to transfer. I removed everything from the honey room, raised the window, put in a screen, then began operations by bringing in one colony at a time, inverting the hive and driving out the bees, catching the queens. The bees all clustered in one big lump near the window.

The old hives were placed where I wished them to stand until it should be time to make another draw on them. The new hives were placed on the stands previously occupied by the old hives, and a caged queen placed over the frames.

Nothing more was done until after sun-down, when, after smoking the bees in the room, I began issuing a quota of bees to each hive. One hive and queen was left in the room to catch the stray bees.

Mr. Urban, for whom this job was done, knew nothing of my singular method, and

when he came out and saw twenty colonies all hanging in one cluster, he came very near fainting; but he revived the next morning when he saw the bees sailing away over the fields after their loads of honey.

TORNDALE, Tex.

Feb. 14, 1892.

Don't Spread the Brood but Cut Holes in the Comb.—Herediacy in Breeding.—How to Get the Best Queen Cells.

JNO. ANDREWS.*



I SEE that now and then some one begins to talk about "spreading the brood" in spring management. I used to do it, but don't now. I often found that I could not tell what the weather was to be and in some colonies

I lost bees. Now, I put about two $\frac{3}{4}$ inch holes through the combs just under the top-bar, and as soon as it will do the bees pass through. As they are near the cluster, the queen will follow, and that will induce more bees to follow, and work begins outside. One who has time, and can watch progress, need have but one or two combs at a time, and the queen will go just as far as the bees will prepare and keep the combs in condition for her.

My work, years ago, was all done as others did it, but for a few years I have been ex-

* John Andrews is the eldest of seven sons, and has now passed his 72nd mile stone; but is yet in active work among the bees to which he has given the most of his time for over twenty-five years. He was born in Queensbury, only a mile from where he now resides. In 1843 he anticipated Horace Greeley's advice and took many strolls through the muddy streets of what is now the big city of Chicago. The next year his father visited him, and, as his father was getting ready to go back, the temptation to accompany him was too great to be resisted. The next twenty years of his life were spent in a custom grist mill, at Patten's Mills. Mr. Andrews was married in 1836 and the companion of his early choice still takes her portion of the cares to be found in life's pathway. Mr. Andrew's first lessons in beekeeping were obtained, from Moses Quinby's old work, although he had kept bees, as they used to keep them, for some years before, and he can now claim over thirty years of bee-keeping; but Time comes on apace and he can but realize:

That he has passed these active years,
And stepping down from day to day,
At every step the ending nears;
And Fate must tell, not far away,
How soon the call, with its behest,
"Take thou thy final gift of rest."

perimenting somewhat. One thing I have learned is, that I can breed gentle or vicious bees, and all from the same queen. But, you say, how's that? Well, I am honest in the belief that the food prepared for a queen or bees will partake of the nature of the bees preparing it, and, consequently, my efforts in breeding are not only to breed from such queens as have gentle bees, but to have gentle bees prepare the food for the queen; and these can be obtained among the most industrious bees.

This law of herediacy holds good in the swarming tendency as well as in many others.

One other thing I have found, that I can get more *good* queen cells from a prolific Carniolan colony than from any other bees I have ever had. On this line I have nearly succeeded in breeding the Carniolans to a non-swarming bee. Four colonies worked on this plan of breeding out the inclination to swarm, gave me, last year, 390 lbs. of section honey, and neither of the four attempted to swarm, and any man working on this line can breed out undesirable tendencies.

To get good queen cells I select, if it is possible to do so, a colony that is getting ready to swarm. If there are none in that condition, I feed one until it is in that condition. I then take away the queen, and let the colony stand for six or seven days. If honey is not coming in, I feed the colony, so as to get all the chyme prepared that is possible. Then, I prepare eggs according to the Alley plan, and with the point of my knife I roll out all the queen grubs started, letting the queen food remain unbroken, as far as can be done. I then insert my frames with prepared eggs, placing them among the most brood. My frames run crosswise of my hives, and I use two frames in each, having a middle cross-bar in each frame, thus making four courses of cells across the hive. Between the two frames of prepared eggs for queen cells I commonly put the two frames containing the most prepared queen food. Thus, you see, I have all the young and older bees to prepare still more queen food, and what is prepared will be used as fast as needed, and is a clear gain. The bees will keep preparing the food as long as there is a queen cell not finished, and the encouragement that the old bees get from the constant hatching of the young bees will press them to a diligent action. I made

frequent experiments last season, and at no time did I get less than seventeen queen cells, and commonly, from twenty to thirty-two, and as fine queens from them as I ever reared, or ever saw.

PATTEN'S MILLS, N. Y., May 23, 1892.

The "Walk Over" Foundation Fastener.

J. A. GOLDEN.*



I enclose you a photograph of my device for putting starters in sections. This is the device that I wrote you about last winter after reading Jan. 15th *Gleanings*, and finding that E. R. Root had invented the same principle

and presented it to the readers of that valuable journal. I did not present my invention to that journal for publication, having, at that time, two other articles sent there for publication. The last one sent appeared in the May number, bearing the title of the first article, thus giving both methods in the one article, which shows the wisdom of the editor.

Not seeing Mr. Root's device in the Extracted Department of the REVIEW, I thought your readers ought to have a view of one of the most valuable implements

*J. A. Golden is 58 years old. He was born in Morgan Co., Ohio. At 15 he was apprenticed to the harness and saddle maker's trade. Five years later he went to Decatur, Ill., where he engaged in the harness business for one year, when he joined a company of Winnebago Indians on a two month's hunting and trapping expedition that took them 200 miles above St. Paul, Minn. Upon his return to civilization he steered for his native State, and finally settled down at Steubenville, where he married Miss Matilda Myers. In 1860 he moved to Medina, Ohio, where he again engaged in harness making for three years, when he returned to Steubenville, and took up photography. City life not being favorable to his health, he and his companion travelled, working at his profession and teaching vocal music. In 1870 he settled down in Reiner'sville, his present home, and erected buildings suitable for his business. His father had been quite a "bee man" in his day, and now that Mr. Golden felt that he was settled in life, the delights of his boyhood's days with bees kept running through his mind, until in 1887, he finally decided to make bee-keeping with photography. Being of an inventive turn of mind, many ingenious contrivances are continually being added to an already bountiful supply. He has been a church member 44 years, being an official member of the M. E. church for a quarter of a century.

ever presented to the fraternity for the purpose of putting starters in sections.

My apparatus (the "walk over") is cheaply constructed, as follows: Take a board two feet eight inches long, seven inches wide, and saw a "boot jack" in one end three inches wide, and as deep as you like. Next take a board eighteen inches long and five inches wide, and mortise a slot five inches from one end, three-eights wide and three inches and seven-eighths long crosswise of the board. On the short end from the mortise nail on a spacing block three and three-quarters inches long by three and seven-eighths inches wide, and seven-eighths inches thick, close to the slot. Below the slot, but even with it, nail on a section shelf five inches wide and two and one-half inches long. For braces or legs take strips two inches wide tapered to one inch, the wide end halved in each side of "boot-jack." A two-inch-deep box shelf is put in ten inches below the base of heating plate, and a hole cut in box to receive the bowl of lamp and thus avoid an accident. On the right side of lamp box is tacked a foundation box. Take a strip of tin seven inches long, one and one-quarter inches at one end and two inches at the other, bend so as to form a spout, tacking the narrow end on top of the farther end of "boot-jack," and one edge of the wide end on the front. Have under the spout a small tin cup made from an oyster can which receives any melted wax when operating. A melted plate three and seven-eighths inches wide and three inches long is placed on top at right angles and held in place by two screws. On the lower end of the short, or section board, place two hinges, and place the board at its proper place by holding the hinges down with one hand and moving the board back and forward on the heating plate, letting the plate rub the upper side of the slot. Fasten the hinges and put in a spiral spring five inches above the hinged end of the section board: the spring forces the section board from the heater. This completes the "walk over" machine.

To learn to operate it, one has only to look and see little Flody pick up a section with her left hand from a table and a starter with her right hand from the foundation box, placing section over the spacer with the starter on the spacer near the bottom, slightly pressing with each thumb on the starter, when a slight push with the hand

will bring the metal tongue through between the section and starter. The starter is dropped on the hot metal, the pressure is relaxed, the spiral spring throws back the section board, the starter falls in place and is firmly fixed to the section. The spacing block should be damped occasionally to keep the starter from sticking.



Flody says she is willing to present her picture to all the bee keeping women if I am willing to present the machine to the bee men. So here goes. What say you, Mr. Editor?

[I say long live little Flody and the "Walk Over."—ED.]

Comments on a Beginner's Day-Book.

No. 6.

E. E. HASTY.*

JUNE, with many of the fraternity, is the month of surplus honey. With me, however, it is seldom worth while to put on supers till the month is well along. It is most frequently my swarm-y month: but in the year we are following swarming did not get fairly begun till June 21st.

* See biographical sketch at end of article.

"June 3d, 1880. Thermometer 56° 73° 61°. Run 1½ oz. Loss by night, 4oz. Swarm from 12 ½ (Michigan queen). Found queen running on the ground. (clipped) Swarm wouldn't light on her cage. Clustered in chestnut tree, but many went back. Put what I could of them, rather a small swarm, with two of their own combs and a capped queen cell into a hive at stand 40° 3°."

This is one of the first installments of the experience that made me a pronounced anti-clipper. My hasty mind painfully lacks placidity as I hunt for a queen that is swarming bed-bug fashion somewhere in the all-out-doors. If I find her the expenditure of nerve power is too great. And especially I don't like the prospect of arriving after she has entered some other hive, or got hopelessly out of sight underneath a hive, or some other place. Moreover, bees made on a machine may come back with the dutiful regularity the books tell of when minus their queen: but intelligent bees like mine often don't. They are much in the same frame of mind as a boy just run away from home—anxious to go any place whatever rather than return to the roof they have just renounced "for keeps." I don't like hopping around in the heat covering up with sheets and things first this hive, then that hive, then 't other hive, as my runaways try to force an entrance.

"June 16th. Mild, bright day. Thermometer 56° 73°. Run 2 lbs. 2oz. Loss by night, 9½ oz. I wonder why no swarms come out."

Ah, greenhorn, you can't pretty much always tell when the swarms will come out. On this occasion, none came out for four beautiful days.

"June 20th. Warm and sultry. Thermometer 60° 87° 65°. Run 9oz. Sunmack in bloom covered with wasps and wild bees, and beetles, and flies, but no *Apis Mellifica*. White clover on the south roads more productive than at home, and many bees gathering there."

Sunmack appears to be a profuse producer of nectar but that wise judge of nectar, the bee, rates it as decidedly No. 2 in quality. Whether we see it swarming with bees, or swarming with everything else and not a single bee, depends wholly on what else there is to be had. This county is great on sumachs—five species, yielding two separate harvests, one early and one late. The late species, *Rhus Copallina*, ("varnished sumach," on account of the glossiness of its deep green leaves) is seldom neglected by the bees. It may not yield any better honey than the other species, but coming after the summer flowers and before the fall flowers it happens to be Hobson's choice.

The influence of soil on the secretion of honey by the same flower, and within range of the same apiary, is one of the wonderful things in connection with our vocation which has never been very fully looked up, I think. It may be that there is nothing practically valuable to be found out in that direction: but in nature it is never quite safe to say that in advance of investigation.

"June 21st. Hot day. Thermometer 61° 89° 70°. Run 15 oz. Loss by night 5 oz. Swarm from 9-6. First trial of swarm-arrester. Bees made frantic efforts to get out—long continued, until their keeper couldn't stand it any longer. And when given their liberty they didn't want it, and got together at last in the upper part of the machine. More trouble than the let alone polley is when the swarm lights in a good place.

Swarm from 2-4. Used the arrester again. Those that got out clustered. Those within, many of them, went back into the hive. Arrest-er a poor tool."

And the arrester that I was trying was, I think, an unusually good one, too. It was so large and light that it could be readily set right over the whole hive. A little poking up of earth around the bottom with the foot makes it bee tight. Its outer walls are partly of thin wood, partly of wire netting and partly of cotton cloth. It went to the lumber room—and in that final limbo of misdirected genius, I fear all swarm arresters belong. No one who realizes how few minutes an insect requires to worry itself to death, when there is nothing the matter with it except mental distress, can feel comfortable to stand idly by and see a noble, prime swarm dissipate its life-energy by worrying. Of course, an inventive mind likes to invent; and to see one's invention work, even partially, is more or less of a pleasure; but when the same amount of ingenuity is devoted to reducing natural swarming to a system, and getting it under easy control, the results are more satisfactory, if I may be allowed to judge. In saying this I do not wish to cast any reproach on those who are working so hard to get a practical self-hiver for out-apiaries. The need of preventing the waste of swarms in colonies so situated is real and great.

"June 23rd. Thermometer 65° 93° 72°. Run 3 lbs. 12 ozs. 12-2, which swarmed 10 days ago, swarmed again. Small cluster, hived in a box to return tomorrow morn. or to use elsewhere. Saw a fine queen, which looked as if fertile, take wing. She ran about the board awhile, then ran in, then came outside again, and after awhile rose."

When a virgin queen looks like a fertile one it is a sign she has quite lately emerged from the cell. Queens are like what is some-

times alleged of Christians, born of goodly dimensions, but growing smaller *until they get to doing something*. To return a swarm the next day is too soon. And this method of dealing with undesirable swarms is, I believe, really valuable in some localities, but often worse than worthless to me. The reason is this. In most localities bees are not expected to swarm unless some honey is coming in (or would it be getting the truth more accurately to say that in these localities some honey is nearly *always* to be had in swarming time?) but bees here often swarm in times of nearly absolute honey dearth. If boxed to return in two or three days they just hang in their box doing nothing until so hungry they are not willing to stand it any longer, and then leave for parts unknown. What else ought to be expected?

"June 26th. Lively times (with seven swarms, some of them on the wing more than once.) Made trouble for myself by smoking out some snatchers from the combs just before hiving a swarm. The bees would not go in but took wing. Afterwards they came back."

It was an unusually happy turn to a bad blunder for a swarm to return and go in itself under such circumstances. We must must keep in mind the fact that the more effective an agent is the greater the liability of doing mischief with it. Drive no smoke inside a hive into which you expect bees to run voluntarily.

"26th Reflection on the troublesome amount of drone comb my new swarms build. Two things lead to drone comb, queenlessness and unusual prosperity. The comb, honey and foundation I give my swarms stimulate the evil. When helping swarms at all it would seem desirable to leave no room for them to build."

Here is a splendid example of immature reasoning fine-spun. Subject exhaustively treated, and conclusions drawn, and with considerable exactness too, and yet the grand cause of the mischief entirely left out. (Treatise on the causes of human poverty, and not a word about drunkenness.) The real trouble in this case was that I had been all the spring very diligently destroying all drone brood in most of my hives. The result was that the bees were half frantic on that subject—the determination to have some drone brood. It seemed to me that they would even cling together and hug a solitary drone pupa they had succeeded in saving—in effect hiding it from me, as I hunted over the combs slaughter knife in hand. Just as I ought to have expected, this abnormal state of feeling affected them

whenever they began to build comb. Because drones were continually on their minds they persisted in building drone comb, and not much else. The difficulty is a serious one, and the remedy is to let things proceed according to nature. My present usage, when I have plenty of combs to give, is to let each swarm have a full set except one empty frame, in which to exercise their natural love for comb-building.

"June 28th. 3-8 swarmed at quarter past eight, sky overcast, and rain just about to begin, so the affair was conducted mostly in the rain. Bees hit everywhere at first but finally clustered. Queen either went back or did not fly at all, as I saw her at the entrance. The bees after hanging awhile in the rain went back."

And this was not, as one would suppose, a second, the bees all excited by a quarrel over a batch of hatching queens, but a prime swarm. Experiences like this rather put a "damper" on the extravagant claims usually allowed to sprinklers and spray-nozzles. Nature can get up a more extensive and effective spray than you can; and yet bees sometimes get so much in earnest about their swarming antics that they pay little attention to nature's demonstrations, and are likely to pay still less to yours. I have tried the sprinkling tactics long, earnestly and faithfully, but finally gave them up as a useless waste of energy. There is this important rebate, however, a swarm clustered in a tree can be wet down every fifteen minutes or so, and thus be kept from escaping until it can be attended to.

RICHARDS, Ohio.

May 31, 1892.

Emerson E. Hasty was born in Standish, Maine, 52 years ago. Came to Lucas Co., Ohio, in 1843; to his present home in 1846. Helped about the bees in childhood. Came to have the principal care of them later—sometimes half a dozen colonies, sometimes twenty or thirty—but never thought of selling any honey—to get some for home use was all. Began to get his eyes open about 1877. Bought the home apiary, then 63 colonies, in 1879. Average number of colonies left in the spring since then about 76. Fearful winter losses in '81 and '85. Locality a barren one as to its honey supply. Largest honey crop a little over a ton and a half. Smallest do. 602 lbs. Best year's yield per colony, 63 lbs. Poorest do. 7 lbs. First grand time of it in writing for the papers in Nellie's Exchange, 1879. Other personal items: Wanted awfully to go to college glad now he didn't. Tried to make up the lack by a large amount of private study. Wished to prepare for and enter the regular ministry well satisfied now that he did not do that. However, he spends much more time, thought and money in pushing the cause of Christian truth in the world than in the care of bees. This, together with broken health, has largely kept him out of the bee papers of late. Best literary work, translation of Virgil's 4th Georgie. Best musical work, the hymn, "Seeking for Me," in Gospel Hymns, No. 6.

**A Revolving Non-Swarmer; How it is to be
Managed and what is Expected of it.**

B. TAYLOR.



YOU know that my bee-yard is laid out in circles. Well, I have practiced, on a large scale, the mixing of bees from different hives, and I have found that bees can be united in a way hitherto unthought of. To take advantage of this fact I have made a revolving stand, upon the outer edge of which will be placed colonies of bees. The hives will be exactly alike, each containing sixteen combs, 6x13 inches in side measure. My new double-walled hives have combs of that size. I will keep the bees in the double hives until the white clover season, when the combs and bees will be lifted into the long hives on the revolving platform. These hives hold three supers each, and each super has sixteen sections. I have used twenty of them, and can keep the strongest colony at work without tiering up.

The platform revolves, and will be turned partly around, say one eighth or one-quarter each day, thus keeping the bees *completely mixed up*. With plenty of room in the brood nest and abundant room for surplus honey, I expect to prevent swarming. If they *do* swarm, I shall just scatter the bees around the circle and *keep them at work*, without increase.

"O, you old goose!" I think I hear you say. Friend H., I am going to spend the balance of my days in making experiments. I do not expect to get *money* for my pay. I do not crave all money for pay. It is the source of all kinds of devilment and shameful work. But I do love to find out hidden things, and am perfectly willing to take my pay in that way: and, as I am situated to experiment cheaply, I am determined to have some happiness. I now have a great store of supplies for carrying on experiments. I have double-walled hives, wintering and spring protecting cases, big hives, little hives, long hives, short hives, deep hives, shallow hives, first class wintering cellars and house apiaries.

O, yes, the house apiary! Well, I am greatly pleased with it, the bees are wintering just splendidly. The sawdust packing is perfectly dry, and the hives, on running my hand down through the sawdust, are as warm as a sitting hen. I prepared the building for a stove and bought the stove, but do not need it, as everything keeps perfectly dry and warm.

My experience agrees with the Dadants in regard to having the covers sealed down for winter, and the man that cannot keep the packing dry on top of the hives is not in the front rank. I sometimes think the fashionable bee journals do more harm than good, as the things they have been booming in the past now seem to be all wrong. Perhaps you will hear more from me on that score.

But to return to the revolving platform: it will not be costly. I roof it with roofing canvass, and have an elegant canopy to shelter many things and make shade. In the spring I shall set sixteen first class colonies on it, feed them, if needed, in No. 1 fashion, and await results.

I have many other fads in mind, but will not mention them.

Now, this is intended as a private letter but you may use it as you like.

FORESTVILLE, Minn., Feb. 9, 1892.

Under date of April 20 Mr. Taylor again writes as follows:—

I have the revolving stand that I wrote you about nicely made and filled with good swarms. It looks nice and works like a charm. "Hail Columbia, happy land!" Taylor's great, perfection, self-regulating, double geared, never-fail, adjustable non-swarmer! I shall have some photos. of the yard soon, and will send you one.

I am greatly pleased with Mr. Aikin, because we are working on the same lines but by different methods.

Advantages of Shipping Bees by Boat.—

Benefits of Giving Water.—Shipping Bees by the Pound.

E. T. FLANAGAN.

IN shipping bees there are so many things to take into consideration that it requires more than a brief paragraph to do justice to the subject. The time of the year, the distance they have to go, the length

of time they have to be confined, the strength of the colony, the kind of hive used in shipping, the mode of shipment, by boat, car or wagon, by freight, or express: these and other minor points must be considered before a satisfactory answer can be given to the question, how to ship bees successfully.

The first requisite is the exercise of good common sense and judgment. I will state, as briefly as possible, from the standpoint of considerable experience, the methods I have found most successful and practical.

In shipping at one time, by boat, some 380 colonies, where they had to be confined from twelve to fourteen days, I found that wire cloth nailed over the whole top of the hive, with the ordinary cover entirely removed, was sufficient ventilation, and that sprinkling with water every twenty-four hours, especially if the weather was warm, was very beneficial; in fact, almost essential to their well being. I shipped the above number in May, from New Orleans, La., to St. Louis, Mo., by boat, without the loss of a single colony.

One advantage of shipping by boat, is the freedom from the severe jarring that is inevitable when shipping by rail; and, of course, the frames do not require to be so securely fastened.

In shipping by rail I found greater precautions necessary. I fastened the bottoms of the frames securely, by using notched sticks fastened on the bottom board. I used the same device for securing the tops of the frames, by simply reversing it, or using it turned down, instead of up.

I found, too, that a simple screen of wire cloth was not sufficient ventilation, as it was when shipping by boat. There had to be a space of at least two inches *above* the tops of the frames for the bees to cluster in; and four inches space, especially with strong colonies, was found better still. Later on in my experience I found that if air could be admitted through the sides of the screen frame, as well as from the whole top, so much the better. The strongest colonies could be, and were, shipped in the hottest weather with safety when prepared in this manner, care being taken to see that they were placed in such a position in the car that air could circulate freely around each hive.

Of course the hives were securely fastened, with the combs the same way as the car, or

rather parallel with the length of the car. Otherwise, with the terrific shocks in starting and stopping, wreck and ruin would have been the result.

I found that sprinkling daily with water, about noon, was a great help in keeping the bees quiet, they remaining so for hours after. I have shipped many car-loads, prepared as described, without material loss.

In shipping single colonies, or so few as not to justify a person going along to care for them, I have found one or two combs filled with water to be of great service, generally resulting in saving the unsealed brood from destruction, as the great heat engendered by the excitement renders the bees very thirsty, and honey alone will not answer their purpose. This method is far superior to that of placing a cloth, or old sack saturated with water, on top of the screen, as that soon dries out, besides, it also obstructs the free passage of the air.

Bottom ventilation for strong colonies is excellent for short distance; but, as the bees are dying more or less all the time, they drop down and soon cover the wire screen and render it useless. All I have said has been in regard to bees shipped in warm weather; but even in the cooler weather of spring and fall it is best to be on the safe side and give ample room and ventilation.

The foregoing applies as well to hauling to out-apiaries, even to the sprinkling with water, for I have noticed time and again that the danger by overheating, and melting of the combs, is *immediately after* the start is made, the jolting and confusion excites the bees to such a pitch that great heat is generated. The application of cold water works wonders, and many colonies are saved. If I apprehend danger, I always, if possible, drench them thoroughly a few minutes after starting to haul to out-apiaries.

Another thing of importance is not to have too much honey in the hives, especially in hot weather, as it renders the combs more liable to break down by their weight, and there is less room for the bees.

In shipping bees by the pound they should always go by express, and the cases made as light as possible, consistent with the strength necessary to resist the rough handling generally given by express men. I have, however, noticed time and again that where a notice is pasted on the package giving information as to the contents, it is handled very gin-

gerly indeed, for fear of the consequences should there be a smash-up.

After years of experience I find it is safer and better in every respect, both for buyer and seller, to send bees by the pound, in a light shipping case, with a frame of brood and honey. They ship safer, are safer to handle, and then the buyer has the advantage of having a lot of young bees hatch out to take the place of the old bees that die off, and it more than compensates him for the *very slight* additional express charges.

Cautionary labels in regard to leaving in the sun, handling with care, etc., should always be pasted on.

One very important point is, *fasten the bees in securely*. Go over them again and again, so as to be sure there are no cracks or crevices by which a *single bee can escape*. More loss, damage, vexation, and serious trouble have resulted from carelessness in this respect than any one other thing in shipping bees. *So do be careful*. That is one advantage the new Heddon and the dovetailed hive have over the old Simplicity and other hives, they can be made bee-proof so much easier, better and quicker.

In regard to what friend Snyder has to say about those 400 colonies of bees he had charge of, *I did make one error* in the matter, and that was that *I did not go along in person*.

It would take too long to tell you all about it, but a few words will make it plain, I prepaid the freight on the 400 colonies to Kenner, La. The R. R. Co. took the bees beyond Kenner twenty miles to New Orleans and then brought them back, and charged me \$50.00 *additional freight*. Had friend S. paid it, though it was an unjust charge, as *I* would have done had I been there, the bees would have been unloaded in good condition and a success assured; but friend S. telegraphed me for instructions. I was away at the St. Louis fair and the telegram did not reach me for three days after. As soon as I got it I telegraphed, "Pay the \$50.00 and unload the bees." But the hot sun and the long confinement had done the work, more than half of the bees were dead and the balance almost worthless.

I sued the R. R. Co. for \$2,000 damages, and after five years litigation a verdict, with interest for five years, was rendered in my favor.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

TERMS:—\$1.00 a year in advance. Two copies, \$1.90; three for \$2.70; five for \$4.00; ten, or more, 70 cents each. ~~£~~ The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN. JUNE 10, 1892.

THE WHITE MOUNTAIN APIARIST is improving, both typographically and in subject matter.

WHEN shall the North American hold its convention at Washington? Is it too early to decide the question?

PHOTOGRAPHS for half-tone work, particularly for portraits, ought to be made with a *tight* back-ground, says E. R. Root in *Gleanings*, and I have noticed that those with light back-grounds resulted in better pictures.

A NEAT BORDER around an advertisement is almost certain to cause it to be read, especially if but few advertisements in the same journal are so adorned. I have several styles of border and ornaments, and shall be pleased to use them in getting up the advertisement of any one who will write and tell me to do so.

TOO SMALL QUEEN CAGES.

Of four queens sent, about a month ago, to E. G. Clark, of Wausau, Wis., two, sent in $\frac{1}{8}$ in. cages, arrived in good condition. The other two were sent in small, $\frac{1}{2}$ in. cages, and one was dead upon arrival and the other in bad condition. Mr. Clark writes that he has had similar experiences before in getting queens. I have always had a prejudice against those *small*, $\frac{1}{2}$ inch cages; I must admit, however, that I have received queens in good condition in these cages. My opinion is that it will not answer to *crowd* the bees. In cool weather, when a larger number of attendents are needed, then larger cages are needed; in hot weather, when 8 or 10 bees are sufficient for a body guard, the small cages will answer; but to save a cent in postage by using a little, cramped up cage, and lose a queen wort a dollar, as the result, is "penny wise and pound foolish."

C. W. DAYTON has a long article in the *A. B. J.* in regard to the use of absorbents in wintering bees. The gist of the matter is that the packing and hive ought to be so arranged that the moisture can pass off and leave the packing dry. Cushions or packing of any kind ought not to be used to absorb and *retain* the moisture. There must be ventilation above the packing, so that the moisture may pass off leaving the packing dry.

THE CLOSED or wide-end frames give trouble in those extractors where the end bars of the frames rest against the wire cloth that supports the comb. The wide end bars hold the comb out from the wire support and the centrifugal force bends the combs or breaks them. See that your extractor is so arranged that the end bars of the frames do not touch the comb support—that the support is slightly shorter than the distance between the end bars of the frame, and so arranged that the edges of the wide end bars can project beyond the comb support.

THE NATIONAL BEE GAZETTE is the name of a new monthly just started at St. Louis, Missouri. It is published by Geo. W. Penn, has 28 pages and a cover, and the price is \$1.00 a year. It is devoted to "The Production of Honey, Bee Culture, Home and Farm Interests;" So many bee journals have been so poorly printed when they started, that I am glad to be able to say that the *Gazette* is quite neat typographically.

THE W. T. FALCONER folks complain that the new journal, the *Gazette*, copied one of their old advertisements without their authority. This advertisement offers five per cent. discount until Dec. 1st, which is an offer that they do not make at this time of the year. *Gleanings* remarks that the insertion of the advertisement was probably intended as a favor, but very appropriately adds that even a free advertisement ought not to be inserted without the consent of the advertiser.

HOW DOES THE BEE-KEEPING OF THE SOUTH DIFFER FROM THAT OF THE NORTH?

Occasionally I get a letter complaining that the REVIEW, in common with other bee journals, is of more value to Northern than

to Southern bee-keepers. It is asserted that the bee-keeping of the South is different from that of the North. I am aware the wintering problem, which is of such absorbing interest to us here at the North, cuts no figure at the South, but, aside from this, I have never been able to understand wherein Southern bee-keeping differed from that at the North. I wish that every Southern bee-keeper, or any one else who understands the matter, into whose hands falls this copy of the REVIEW, would write me a letter and explain wherein lies the difference between Northern and Southern bee-keeping.

THE AMERICAN BEE JOURNAL CHANGES HANDS.

After having been for nineteen years under the management of that veteran editor, Thos. G. Newman, the *American Bee Journal* has passed into the hands Geo. W. York & Co. Continued poor health compelled Bro. Newman to make this change. The supply trade and the *Home Journal* still remain in the hands of T. G. Newman & Son.



GEO. W. YORK, THE NEW EDITOR AND PROPRIETOR OF THE AMERICAN BEE JOURNAL.

Although Mr. York is a young man—30 years old—he is not without experience in the publishing of a bee journal. Almost the first time that I visited Chicago, some eight or

nine years ago, I found him at work in the *Bee Journal* office, where he had been several months. He has been there most of the time since, doing everything from sweeping floors to writing editorials. Industry and perseverance now get their reward.

Mr. York and I "took to each other" at once, and in the friendly chat that followed he told me that he and a fellow workman were saving money by keeping "bachelor's hall" in the basement of Mr. Newman's house. Perhaps this is "telling tales out of school," but this little thing raised Mr. York wonderfully in my estimation, and I wish my readers to share in this feeling.

The next time that I met Mr. York was when the North American met at Indianapolis. He had just returned from his wedding trip, and his heart was overflowing with his newly found happiness. We occupied the same room at the hotel, and the long confidential chats that we had over life and its problems gave me a still deeper insight into his nature.

When next I visited Chicago I slipped away from the convention one evening and visited the pleasant home of Mr. and Mrs. York. Since then I never go to Chicago without having a chat with "George," and I feel that of all the bee-keeping editors I am the best acquainted with him, and that I am qualified to say that the readers of the *A. B. J.* will find their new editor to be fair and fearless, genial and just. The REVIEW and *A. B. J.* will pull together tip top.

SMOKE AND SMOKERS.

I presume that bee-keepers seldom stop to think, as they watch the puff, puff of the white smoke, that these wreaths of curling vapor might be fittingly compared to a halo of glory surrounding the crown of successful bee-keeping. Smoke and smokers are greater elements in the success and comfort of bee-keeping than many of us realize. To be sure, good natured strains of bees can be handled, after a fashion, without smoke, when there is a honey flow, but no argument is needed to prove that modern bee culture would be well-nigh impossible without smoke; in fact, Dr. Miller once said that he didn't know but it would be worth while to devote one number of the REVIEW to a discussion of smoker fuel. Since he said that I have many times thought that he might not have been so far out of the way

after all, and I have decided that the July issue shall be devoted to a discussion of this very topic: and while we are at it we may as well try and decide which is the best smoker in which to burn the fuel.

Of the fuels, none take fire more readily, or "hang fire" more persistently, than decayed wood. For starting a fire in a smoker, dry, rotten elm is unexcelled. The objection to rotten wood is that it burns out so quickly. Mr. Bingham recommends sound, maple wood sawed into three-inch lengths and split up into pieces the size of a lead pencil. I presume that such fuel would burn well in the Bingham smoker, after the fire had been started with rotten wood, as in this smoker the fire receives the direct blast of the bellows. Mr. Bingham says that this fuel gives but little creosote. I have never used such fuel, and, in my visits among bee-keepers, I have never found it in use. I presume it is because of the forethought and labor necessary to secure this kind of fuel. Bee-keepers seem to prefer something that comes to hand all ready for use. Corn cobs make a lasting fuel, but, unless very dry, they do not ignite readily and are quite likely to "go out" unless kept well in hand.

But instead of mentioning the different kinds of material that may be used for fuel, I will come directly to the point and say that my favorite fuel is planer shavings, such as come from a planing mill. These shavings do not take fire so readily as one would imagine. The fire ought to be started with rotten wood, or a small, spring-bottom oil can filled with kerosene may be used to squirt a little oil on a few shavings when starting the fire. They can be lighted with a match, without the use of oil, by first putting in a few at one side of the barrel and placing a lighted match at the bottom of the heap of shavings. As the blaze plays over the surface of the shavings, gradually incline the smoker to one side, causing the shavings, a few at a time, to tumble down on the fire; at the same time the bellows should be worked moderately. The idea is to get a mass of burning shavings at the bottom of the barrel, when the smoker may be filled with fresh shavings which will "smolder" for hours if left to themselves, but when the bellows is operated a cloud of clean, cool, white smoke will belch forth. One who has not tried shavings as a fuel will be surprised at the length of time they will last, and how they will "hang fire"

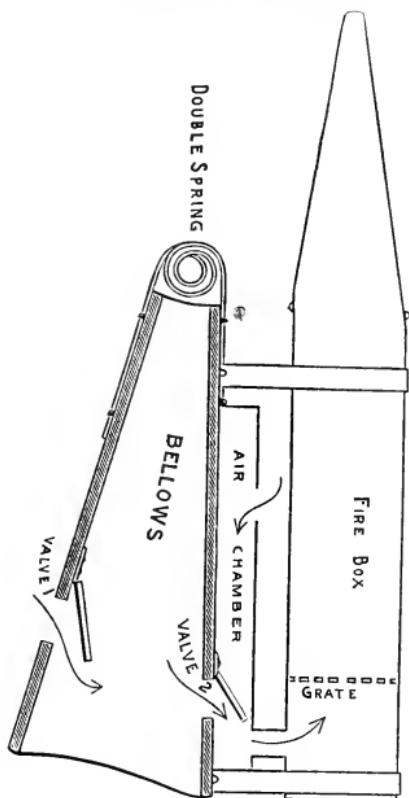
after being once well-started. To prevent the fine shavings from being blown out of the smoker nozzle, Mr. Heddon advises using "bench" shavings on top—wetting them with water before putting them in the smoker. "Bench" shavings are those made with a hand plane when planing a board on a bench. Others have used a bunch of fresh grass in the smoker nozzle. I don't like the grass, as it becomes daubed with creosote, sticks to the sides of the smoker and makes a nasty looking mess. I have quit using anything over the shavings. If an occasional shaving is blown out no great harm is done, unless it is on fire, and this will not happen unless the fire has been allowed to burn low.

Of smokers there are two classes, the cold-blast—those that simply blow out the smoke without blowing the fire—and those that blow the fire direct. The former need a better class of fuel—fuel that will burn more readily—because they must depend for their draft upon the suction caused by blowing out the smoke. Upon the other hand, the smoke is driven out with greater force in the cold blast style, because the blast comes direct from a tube having close connection with the bellows, while in the Bingham style the blast is simply blown into an opening at the bottom of the fire-barrel in which it must overcome the resistance caused by the barrel being filled with fuel. When we consider that there is no connection between the bellows and the fire-barrel it is surprising that the blast is as strong as it is.

Perhaps some will ask, why not have a close connection between the bellows and the fire-barrel? As I understand the matter, the trouble is that the direct draft would be cut off. That is, when the bellows was not working there would be no draft through the fire. This cut-off between the bellows and the fire barrel allows a draft to pass through the latter—just as it would through a stove—when the smoker is not in use. There is still another point. If there were a continuous connection between the fire and the bellows, sparks, smoke, soot and smoke would be sucked back into the bellows, which would soon ruin it.

But it may be asked, still further, cannot these difficulties be overcome? Yes, I believe that Mr. J. E. Crane of Middlebury, Vt., has, for several years, been making and using, with much satisfaction, a smoker com-

bining the advantages of both the hot and cold blast styles. The accompanying cut will give a fair idea of its construction.



CRANE'S DOUBLE-VALVE SMOKE.

As the bellows opens, the air enters through valve No. 1. As the bellows is closed, the air is forced through valve No. 2, through the closed end of the air chamber and through the connecting tube, *directly* into the fire barrel. As soon as the air in the bellows is exhausted, valve No. 2 closes, thus shutting out smoke and sparks from the bellows, and valve No. 1 opens admitting a fresh supply of air. When not in use, valve No. 2 is always closed, and the fire gets air from through the opening near the top or upper end of the air chamber.

It will be seen that by this arrangement a continuous passage is formed from the bellows to the fire chamber, thus enabling the operator to blow the fire and drive out the smoke with a strong blast; at the same time, smoke, sparks and soot are shut out of the bellows, while the fire has a direct draft when the smoker is not in use.

It may be asked why this smoker has not been put upon the market. Mr. Crane says that so many smokers being already on the market, and this one being expensive to make, he doubted if the sales would be sufficient to pay for the trouble.

As a cold blast smoker, the Clark is objectionable on account of its being a "breech loader." The fire in a smoker ought to be at the *bottom* of the fire box, with the fresh fuel above. With the fire at the top, the danger of blowing out or dropping sparks is greatly increased. The Hill cold blast smoker overcomes this objection, as it also does that of being obliged to hold the fire box in such a position, when driving smoke *downwards*, that sparks may drop out.

But enough has been said to start the discussion; now let smoker makers and users criticise and comment, and contribute their views for the July issue.

EXTRACTED.

Some Arguments in Favor of Setting Bees Out of the Cellar Early in the Spring.

A great many advise keeping the bees in the cellar as late as possible in the spring, in order to avoid the cold spells that are almost certain to come. I am satisfied that for this locality it is better to take them out as soon as it is warm enough for them to have a cleansing flight, and then protect them. Mr. N. D. West so clearly sets forth the reason why this plan (of taking them out early) is advisable, that I copy from *Gleanings* what he has to say upon this point:

"I find that most bee-keepers say, 'Keep the bees in the cellar until natural pollen is ready for them.' With the hive that I use, I must differ with them for this reason: Bees will remain quiet, and winter well in the cellar for about four months; and if kept in five months, more will die or get weak—the last month, more than all the first four months. I have set bees out at all times from Feb. 1 to May 7. This is too early and too late. But any time after the 15th of March, when the weather is fine, so the bees can get a good cleansing flight, and if no snow is on the ground, is the time to take bees out of the cellar. But, oh! we want a day when the bees will not waste much in their first flight. If we knew the weather would be fine in a day or two after, it would be best to carry them out at night, or on a cool day, (we do so with our out-yards, if the day is such when we get there), then they do not fly until it is warm enough. After our bees have had one or two flights

I'd rather have it cool, to keep the old bees in the hives.

Now, I think my bees are more healthy than they would have been if I had kept them in one month longer: and they now begin to rear brood, and the old bees stay at home and keep the brood warm, and live until the young bees begin to take their place.

I always get some rye ground just as fine as our miller can grind it, and leave the bran in with the flour: and if we have a few warm days, give the bees some of this. Place it in a shallow box two feet square, near the yard, and the bees will have work close at home; and this, too, will stimulate them to breeding. But we will be likely to have considerable cold weather when the old bees will be like a sitting hen—keeping their eggs warm. Now, when natural pollen comes, say April 8, the young bees will begin to hatch, and the old ones will begin to work very hard, and soon die; but the young bees will hatch out as fast as the old ones die, and take their place: and this prevents spring dwindling (as it is called), and the old bees have been worth much in rearing this brood. If we wait until April 8 before we set our bees out, then the bees start right off hard at work, pell-mell, and, being weaker, too, by their longer confinement, die off fast, and will be able to care for but a small amount of brood, and spring dwindling is the result; and by May 8 the bees will not be as plentiful in the hives as they were when set out; and then comes the trouble of changing combs, and much fussing work to get the bees ready for the honey harvest. But those set out in time to have the young bees coming on to take the place of the old ones that die off fast when no pollen comes, will be ahead, and keep so, without all of this fussing; and another thing, we are apt to have a few swarms that are weak, and liable to get robbed if not watched when carried out early: and after their first flight look for and find out whether any are poor; and if so, carry those back into the cellar, and leave them in until natural pollen comes; then set them out and care for them as they need. They will not be as liable to get robbed now, but these few should be put on from three to five frames, just what they can protect and care for. If better swarms should lose a queen, unite with one of these."

How to See Bees when they Swarm.

R. Wilkin, in an interesting article in *Gleanings*, brings up a point that has seldom been mentioned in the journals, that of the ease with which bees can be seen in the air when there is a strong contrasting color for a background. My old apiary out at the farm was about fifteen rods from the house. Beyond the apiary was a stream of water having a "fringe" of alder bushes on its margin. By stepping to the back door of the house and using the dark green of the alders as a background, I could at any time

ascertain if there was a swarm in the air. Mr. Wilkin brings out this point so nicely that I take pleasure in quoting two or three paragraphs:

"At one of my apiaries, as I stood looking east out of the door of my house, the mountain rising abruptly four hundred feet in front of me, the apiary lying between me and the rising earth, as the sun arose, not shining on me or the hillside, but lighting up everything between us, every bee became visible as it arose from its hive, circling, gliding, darting, or gracefully wending its way far up the mountain side. The eye could settle on any bee and follow it hundreds of feet away, the vibrations of the wings, even, being quite distinct, giving the appearance of a thread of raveled stocking yarn; even silvery spider-threads, like ropes, long and short, perpendicular, horizontal, or curved, could be seen wafted gracefully amidst this scene of insect life before me. But every one cannot have a mountain at his command, and must substitute a make-shift.

Swarms are best seen when looking in the direction of the sun from nine to three o'clock, as the shadows of trees and other objects are seen most in that direction. I find it very serviceable to have a thicket of trees or sage-bush just outside the apiary, especially on the southeast side, and making their shadows close above the tops of the hives. I help this by clearing away under-brush, or piling limbs and leaves in such a way as to shut out the sun. I sometimes set boxes or empty hives on the tops of the hives on the outer ends of the rows, with the open side next to me, so as to make a dark shadow on the inside next to me. This helps some when there is nothing better.

Last season I purchased a web of black muslin and cut it into pieces from one to three yards long, and placed them for backgrounds just outside the apiary at the sides most needing them, and just high enough to be plainly seen above the tops of the hives. I held them in place by fastening them to stakes five or six feet long driven in the ground. I find this a very serviceable device. Visitors ask what the black cloths stretched around the apiary mean. I tell them that, having lost many bees last winter, I drapé my apiary as a badge of mourning. When swarming is over I roll them up to keep for other years."

If Mr. W. E. Dayes gets his electrical swarm notifier to work as successfully as he has used electricity for imbedding wires in foundation, there will be much less "watching for swarms" by those who employ it.

The Merits and Demerits of the Punic Bees.

"As the writer happens to have been the first to call general attention to this race of bees, under the far more appropriate name of Tunisian bees, Tunis being the native land of the race, and as he has had considerable experience with them in Tunis, and

also in several other countries, he may be allowed to express an opinion as to their merits and demerits. The former are soon told, for the Tunisians (or Punics) are industrious and prolific, somewhat more so than any race of bees coming from Europe, but rather less so than the eastern Mediterranean races (Cyprians, Syrians, and Palestines). But their faults make a list! They are small and very black; are spiteful stingers, as vindictive as the worst race known; bite in addition to stinging; are great propolizers, daubing hives, sections, and combs lavishly with "bee-glue;" they swarm as much as do the Carniolans and winter as poorly as do Palestines."—FRANK BENTON, in *American Farmer* for May, 1892.

How to Make Honey Vinegar.

In the close times that bee keepers are now having, it is well to look after all the odds and ends; to see that no scraps of comb are thrown away, and that the rinsings from the cappings, or from utensils that have contained honey, are not wasted. In many an apiary I presume that enough of these rinsings are thrown away in a year to make a barrel of vinegar. Plain and simple yet complete directions for making honey vinegar are given by Dadant & Son in *Gleanings*. They say:—

"There are, in the formation of vinegar, two kinds of fermentation. The first transforms into alcohol the sugar, or saccharine matter of the liquid used; the second changes into acetic acid the alcohol produced. The germs that cause alcoholic fermentation exist around ripe fruits, and, to some extent, in honey, and develop best at a temperature of about seventy-five to eighty degrees. The second fermentation, which develops acetic acid, finds its germs in the atmosphere, and may take place almost immediately after the other has begun, and long before the saccharine matter has been all transformed into alcohol, so that the mixture may be sweet, alcoholic, and sour at the same time. It looks rather contradictory to say that a liquid is sweet and sour; but that is often a fact, nevertheless. The more prompt and thorough the alcoholic fermentation, the more readily will the liquid be transformed into vinegar when the acetic fermentation begins.

Honey does not contain the germs of fermentation in sufficient quantity to make a thorough alcoholic fermentation; and when mixed with water and left to itself it will require several months to convert the mixture into an alcoholic beverage, and several months more to change it to vinegar.

If we are not in a hurry, we may succeed in making good vinegar by filling a barrel half full of water, adding two pounds of honey to the gallon of water, and a few gallons of fermented or unfermented cider, keeping it in a warm place, and covering the bunghole with wire cloth or with a piece of thin cloth, which may keep out insects and

dust. By this method half a barrel of honey-water may be changed into good vinegar in two or six months, according to the temperature.

As we sell vinegar to our neighbors, but do not care otherwise to keep it for sale, we have been in the habit of keeping two barrels for vinegar. One contains the oldest vinegar, from which we draw for use; the other contains the souring liquid. As we are growers of grapes, and make wine, we are in the habit of fermenting a certain amount of honey-water in our wine-cellars, and this is used only when it has already undergone the alcoholic fermentation, and sometimes with the addition of a little wine, which gives it color, and adds to the good taste of the vinegar. This mixture is kept in the second barrel, both barrels never being more than half full; and as fast as we take vinegar from the first we add to it an equal quantity from the other.

When honey-water has been made in such a way as to make it impossible to weigh the honey—for instance, by washing cappings or honey utensils, barrels, cans, etc., we test its strength with a fresh egg, which should float, just showing itself at the surface.

The best method to induce a prompt and thorough alcoholic fermentation in honey-water is to mix it with a large quantity, the more the better, of crushed fruit, such as cherries, berries, grapes, apple pumice, or even with the pumice of grapes, commonly called "cheese," just after the fermentation of the grapes. The more fruits are used, the more thorough the fermentation. The mixture should be kept at a high temperature in vats or open barrels covered only with muslin or some light cloth, and the vessels should be filled only about two-thirds, so as to avoid loss, as the mixture rises like bread, during fermentation. As soon as the turbulent fermentation is over, the liquid should be drawn into barrels. This is usually after a week or so, if the temperature is right. The barrels should not be filled more than half full, as the liquid must be exposed to the air as much as possible, in order to hasten the acetic fermentation which is fed from the atmosphere, as said before. The addition of a gallon or two of strong vinegar will induce a more prompt acetic fermentation. Good authorities also recommend the use of vinegar mother—a slick, slimy substance found in vinegar, and which is said to be decomposed vinegar. This vinegar mother is taken from an old vinegar-barrel, washed clean, cut into pieces, and these are added to barrels of forming vinegar.

After the vinegar has undergone the main acetic fermentation, if it becomes necessary to transport it or to put it into closed barrels, it should be racked, or drawn from its lees. If cloudy, it can be made clear by putting in each barrel the white of an egg, and stirring it with a stick. It will not become entirely clear until the last fermentation is nearly all over.

Honey vinegar is far superior to the best cider vinegar, and can compete successfully with the very best wine vinegar.

There are only two drawbacks to the making of vinegar. It takes a great deal of

room, and it spoils all the barrels that are used. The acid eats up the iron hoops wherever it happens to leak, and the wood is often bored full of holes by worms, when not in use.

There is a quicker method of making vinegar on a large scale, but this requires a special building and apparatus. We will give it to your readers, however, if desired. In making vinegar as above described, any ordinary shed, such as is used for a cider press, will do, if used during warm weather; and to keep the vinegar, any ordinary cellar is suitable; but, as we said before, a temperature of about eighty degrees will best aid the making of vinegar.

HAMILTON, Ill., April 1.

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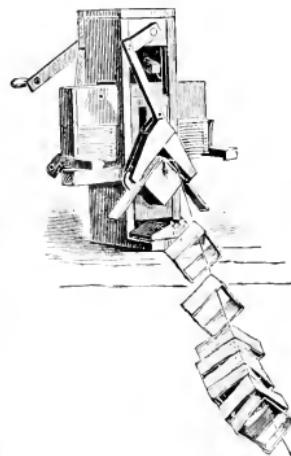
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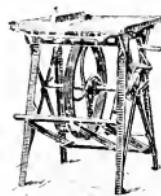
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In June, 90 cts each, or six for \$4.50. July and after, 75 cts each or six for \$4.00. Tested queens in June, \$1.50, or three for \$4.00. July and after, \$1.25 or three for \$3.50. Select, tested queens from \$2.00 to \$5.00 each.

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Only \$5.00 will buy

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I would sell any of these articles for cash, or I would exchange them for extracted honey.

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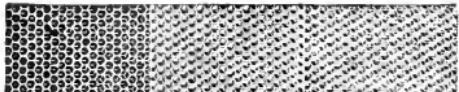
If you wish to advertise anything anywhere at any time write to **GEO. P. ROWELL & CO.,** No 10 Spruce St., N. Y.

Golden, Honey Queens.

Queens in June, untested, \$1.00; six for \$5.00. Tested, \$1.70. Select tested, \$2.50; extra select, \$4.50; the very best, \$8.00. Imported, \$6.00.

LEININGER BROS.,

12-91-1f Ft. Jennings, Ohio.



Hunt's Foundation

Is a superior article. Warranted good as any ever made. Dealers and others write for samples and prices. Sections and Dovetailed Hives in any quantity. Free price list of everything needed in the apiary. **M. H. HUNT, Bell Branch, Mich.**

2-92-ft *Please mention the Review.*

(Near Detroit.)

Italian - Queens.

6 Warranted Queens, \$5.00.

Send - for - Circular.

J. T. WILSON,

4-91-tf Pink, Kentucky.

On Their Own Merits!

Those who have had queens from me say my

5-Banded Golden Italians

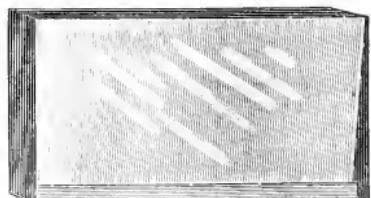
Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. *None but the very best Queens sent out;* large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00, 6 for \$5.00. Special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.

CHAS. D. DUVAL,

Spencerville, Mont. Co., Md. 12-91-tf

Please mention the Review.



BEE - FEEDER.

POSITIVELY the best entrance bee-feeder ever made. No robbers can get at it and it can be used where any other feeder can. When once tried, no other will be used. Capacity, one quart. It is made from the best tin, and with proper care will last a lifetime. Price 25 cts.; two, 40 cts.; six, \$1.00. By mail, five cts. extra. Manufactured and sold by **W. D. SOPER, Jackson, Mich.** Dealers wishing to sell these feeders should write at once for prices. 6-92-tf

Please mention the Review.

ITALIAN QUEENS

Prices for June and after.

One untested queen, 75

Three " queens, 2.00

One tested queen, 1.50

Three " queens, 1.40

Very best, select, tested queen, 3.00

Two - frame nucleus, with any queen, \$1.50 extra. Safe arrival guaranteed.

W. J. ELLISON,
3-92-3t CATCHALL, S. C.

Root's D. T. Hive

AT HIS PRICES. Sections $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$, snow white, per 1,000 \$3.75; cream colored \$3.00. Comb Foundation, Smokers and Aparian Supplies of all kinds, Circular free. Save freight and order early of **GEO. W. COOK, Spring Hill, Johnson County, Kansas.** He can also furnish yellow Italian queens, bred for business, and warranted, at \$1.00 each, or six for \$5.00. Ten per cent off on all orders received before May 1.

Please mention the Review. 12-91-6t

MUTH'S

Honey - Extractor,

Square Glass Honey-Jars, Tin Buckets, Bee-Hives, Honey-Sections, &c., &c. Perfection Cold-Blast Smokers.

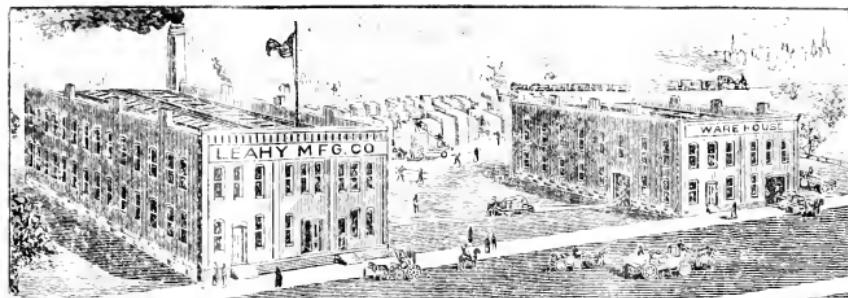
Apply to **CHAS. F. MUTH & SON,** CINCINNATI, O.

P. S.—Send 10-cent stamp for "Practical Hints to Bee-Keepers." 2-88-tf.

BEESWAX,

Imported or Domestic, Crude or Refined. A Stock Constantly on Hand. Write us for Prices, Stating Quantity Wanted. 4-92-4t

ECKERMAN & WILL, Syracuse, N. Y.



The above is a representation of our factory, built and equipped exclusively for the manufacture of *Apiarian Supplies*. We have in connection with our business a *lumber yard*, a *tin shop* and a *Printing Office*. All this enables us to manufacture and sell almost all kinds of goods very *cheap*. We have sold over *sixteen car loads* of supplies since Nov. 1, and of those contemplating buying either in *small* or *large quantities* we ask a *trial*. Remember we will not be *undersold* or *excelled in quality*. 24-page Catalogue free. Address 1-92-6t

MENTION REVIEW.

LEAHY M'F'G CO., Higginsville, Mo.

BEE SUPPLIES RETAIL AND WHOLESALE

Everything used in the *Apiary*. Greatest variety and largest stock in the West. New catalog, 60 pages, free to bee-keepers.

Special Discount to Dealers.

1-92-6t E. KRETCHMER, Red Oak, Iowa.

YOU WANT THE

Best Bee Hive

Especially if it costs no more than the common hive. My new **Double Wall Hive**, "No. 10," is the best summer and winter hive yet devised. Takes regular "L" furniture; is lighter than the $\frac{1}{2}$, single-wall hive; may be storyed to any extent, etc., etc., and is sold at a very low price. Full description in free circular. A full line of bee-keepers' supplies always in stock. Catalog free. C. W. COSTELLOW, Waterboro, Maine.

Minnesota Ahead

Why? Because in consequence of her pine forests, lumber is cheap. That's why ERKEL sells hives cheaper than any one else. Only think! single-story hives, from 35 cts. up. Two-story hive, from 70 cts. up. Other supplies cheap. Send for catalog. 3-92-1f

F. E. ERKEL, Le Sueur, Minn.

50, Root's, New, Dovetailed, HIVES

at a bargain. This season's make, with Hoffman frames. 6-92-1f

A. F. MADAMS, Columbus Grove, O.

Please mention the Review.

White Poplar Sections.

We have New Steam Power, and New Buildings, and are now ready to furnish White Poplar Sections, Clamps, Crates and Wood Sides at short notice. Workmanship, Quality and Price unsurpassed. Send for sample and price list.

PRIME & GOVE,

1-90-1f Bristol, Vermont.

PATENT WIRED, COMB FOUNDATION HAS NO SAG IN BROOD FRAMES.

THIN, FLAT BOTTOM FOUNDATION HAS NO FISH BONE IN SURPLUS HONEY.



Being the cleanest is usually worked the quickest of any foundation made. J. VAN DEUSEN & SONS, (SOLE MANUFACTURERS), 3-90-1f Sprout Brook, Mont. Co., N.Y.



JNO. NEBEL & SON,
High Hill, Mo.

3-92-1f

BUY CHEAPLY, BUT BUY WELL.

It pays to buy reliable goods. Poor goods are dear at any price. We sell **CHEAPLY** and our **Bee Hives, Sections and all Supplies** are **FIRST CLASS**.

Catalogue, price list and sample copy of the

American Bee-keeper

sent free. Address

THE W. T. FALCONER Mfg. CO.,
Jamestown, N. Y.

Please mention the Review

BASSWOOD HONEY, Extra Quality.

USUAL LOW PRICES.

Address

JAMES HEDDON,
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Golden, Italian Queens.

Unexcelled for purity, beauty and all other desirable qualities. I guarantee safe arrival. Tested, \$1.25; untested, 75 cts.

Miss F. M. McKNIGHT,

6-92-1t

Estabutchie, Miss.

Please mention the Review

GOLDEN ITALIAN QUEENS.

My apiary is located on the broad prairie, 3 miles from other bees; hence, not one queen in 100 will be misnamed. Warranted, in May 75 cts. each; two for \$1.25. Tested, \$1.00; two for \$1.75. After June 1st, warranted queens 65 cts. each, or two for \$1.00.

C. B. BANKSTON & CO.,

5-92-1t

Thorndale, Texas.

The Lone Star Apiary Sells



QUEENS

As cheaply as anybody. Untested queens, after June 1st, 75 cts. Six for \$4.20. Tested queens, after June 1st, \$1.00; six for \$5.00. Nuclei, 75 cents per frame, Langstroth size. Price list free on application. Correspondence solicited. Discounts given on large orders; write for special prices. Remit by Pacific Express money order, P. O. money order, or postal note. Satisfaction and safe arrival of queens guaranteed.

OTTO J. E. URBAN,

3-92-1t

Thorndale, Texas.

1852.

REDUCTION ON THE PRICE OF

1891.

Langstroth on the Honey Bee. (REVISED.)

PRICE BY MAIL, \$1.40: BY EXPRESS OR FREIGHT WITH OTHER GOODS \$1.25.

By its copious indexes, by its arrangement in numbered paragraphs, including reference numbers on any question in bee culture, any information can be instantly found. This book is the most complete treatise on bee keeping yet published. A FRENCH EDITION JUST ISSUED.

1876. DADANT'S COMB FOUNDATION. 1891.

More than Ever. Better than Ever. Wholesale and Retail.

Half a Million lbs. Sold in 13 Years.

Over \$200,000 in Value.

It is THE BEST, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year. Samples, Catalogue, free to all. Send your address.

We also make a specialty of Cotton and Silk Tulle of very best grade for bee-veils. We supply A. I. Root and others. 7,000 Yards just received. Prices Very Low. Samples Free.

Smokers, Honey Sections, Extractors, Tin Pails for Honey, Etc. Instructions to Beginner with Circulars Free.

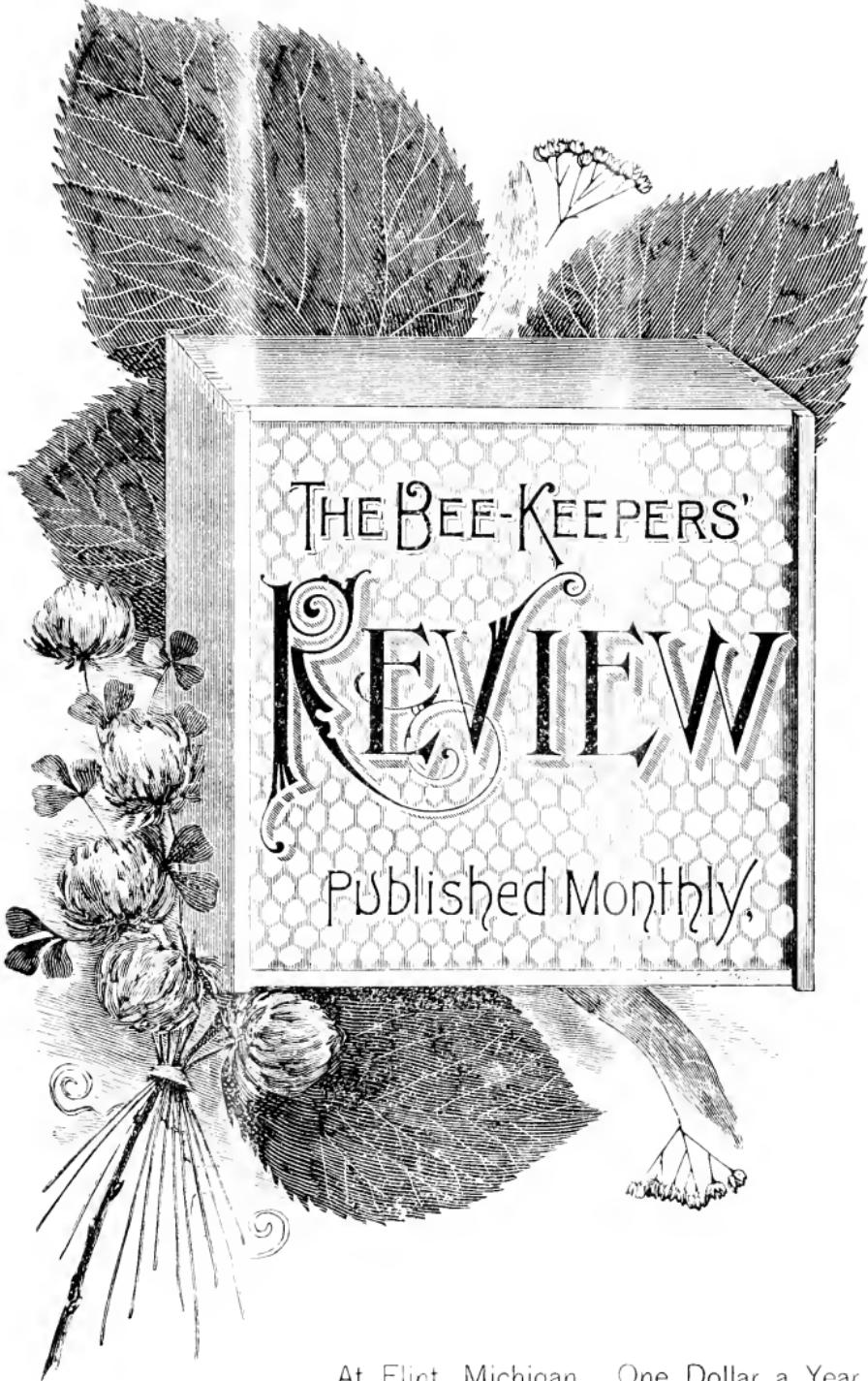
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Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

The Golden, Yellow, Italian

JULY 10, 1892



THE BEE-KEEPERS'
REVIEW
Published Monthly,

At Flint, Michigan. One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:—

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

CLUBBING LIST.

I will send the REVIEW with—	
Gleanings,	(\$1.00)
American Bee Journal,	1.00)
Canadian Bee Journal	1.75
American Bee Keeper	1.50
Missouri Bee Keeper	1.50
Bee Keepers' Guide	1.50
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Bee-Keepers' Magazine	1.50
	1.75



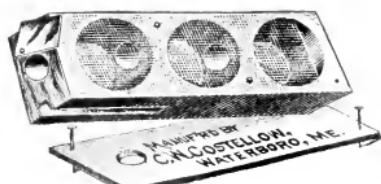
THE BEST ON EARTH!

Doctor Smoker,	3½ inch,	2.00
Conqueror Smoker,	3 "	1.75
Large Smoker,	2½ "	1.50
Extra Smoker,	2 "	1.25
Plain Smoker,	2 "	1.00
Little Wonder Smoker, 1½ "		65
Bingham & Hetherington Knife,		1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINCHAM & HETHERINGTON,
1.90-tf. Abriona, Michigan

Please mention the Review.



Western BEE-KEEPERS' Supply Factory.

Largest Business of the kind in the West.

We manufacture Bee-Keepers' supplies of all kinds, *best quality at lowest prices*. Dovetailed Hives, Sections, Foundation, Extractors, Smokers, Crates, Veils, Feeders, Clover Seeds, Buckwheat, etc. Imported Italian Queens, Queens and Bees. Sample Copy of our Bee Journal, "The Western Bee-keeper," and latest Catalogue mailed Free to Bee-Keepers. Address JOSEPH NYSEWANDER, DES MOINES, IOWA.

4.92 tf Please mention the Review.

Progressive • • •

• • • Bee-keeper

Is not dead, but sometimes a little late, it is always filled with valuable ideas. It is up with the times. Its editor is a practical bee keeper. To get acquainted with you, we will send it to you **Three Months for Five Cents**. Monthly, 50 cts. a year. Sample copy free.

SPECIAL. For \$1.15 will send one warranted queen and the Progressive Bee-keeper one year to introduce it. Address

PROGRESSIVE BEE-KEEPER,
Unionville, Mo.

Bee Hives and Section Boxes.

Simplicity, Langstroth-Simplicity, Standard Langstroth, Dovetailed and Champion Chaff Hives, Supers, One Piece Sections and Shipping Cases, Foundation, Smokers, etc., etc. Send for 16 page Circular.

1.92-tf PAGE & KEITH, New London, Wis.

Please mention the Review.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

Please mention the Review.

QUEEN CAGES

Are my specialty. I make the Benton cage in many styles and sizes. A light cage saves postage; a neat cage creates a favorable impression; one properly arranged carries its occupants safely in either hot or cool weather; and my special machinery and large trade enable me to furnish extra nice cages, having all these advantages, at a very low price. Sample cages and prices on application.

C. W. COSTELLOW, Waterboro, Me.

MORE HONEY

Can be secured by giving plenty of room in the supers to the very end of the harvest. This plan results in a larger proportion of unfinished sections, but they can be finished up at *good profit* by "feeding back" during the hot weather that comes, in July and August, between bass-wood and fall flowers. All that is needed is a knowledge of "how to do it," and this is given, even to the minutest detail, in one of the chapters of "**ADVANCED BEE-CULTURE**." Remember, too, that this is only one chapter out of thirty-two.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price \$1.00. Mailed, postpaid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address **ROWELL'S ADVERTISING BUREAU**, 10 Spruce St., N. Y.

On Their Own Merits!

Those who have had queens from me say my

5-Banded Golden Italians

Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. **None but the very best Queens sent out;** large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00; 6 for \$5.00. Special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.

CHAS. D. DUVAL,

Spencerville, Mont. Co., Md. 12-91-1f

Please mention the Review.

**ITALIAN QUEENS AND SUPPLIES
FOR 1892.**

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-58-tf.

Augusta, Georgia.

Italian ~ Queens.

6 Warranted queens, \$5.00.

Send - for - Circular.

J. T. WILSON,

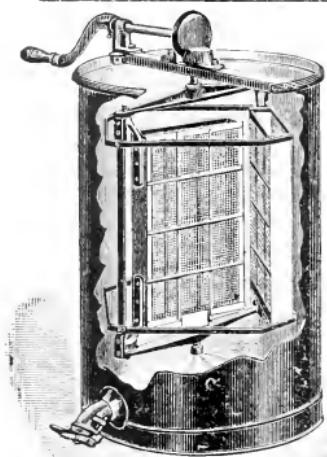
Pink, Kentucky.

DR. J. W. GRENshaw,
Versailles, Ky.

OFFERS for sale untested QUEENS in June at \$1.00 each. After June at 75 cts. Imported or American mothers. Contracts solicited. Also Celery Plants July to Sept., at \$2.00 per 1000. Also any of Root's goods.

6 92-44

Please mention the Review.

A Grand Success.

Mention Review.

New Cowan Reversible
HONEY EXTRACTOR.

May be Reversed Without Stopping the Machine.

Strong, well made in every respect, light, and of convenient size. The can is but little larger than that of the Novice. The gear is beveled and covered by an iron shield, and the crank outside the can. Frank McNay, of Manitowoc, Wis., a bee-keeper who produces tons and tons of extracted honey, says of it: —

"After carefully examining and trying the Cowan extractor, I have failed to find a weak part, and I do not hesitate to say that it is the best extractor made, both in regard to convenience and durability, and I shall replace all of my five machines with the Cowan as soon as possible."

It is endorsed also by J. F. McIntyre, an extensive extracted honey producer of California; by W. Z. Hutchinson, Dr. C. Miller, and others.

Price all Complete, Jappanned and Lettered, for L. Frame, \$10.

A. I. ROOT, Medina, O.

Weekly "American Bee Journal" —

—32 pages—\$1.00 a Year—

The Oldest, Largest, Best and Only Weekly Bee-Paper in America. Sample Copy Free.

The American Bee Journal

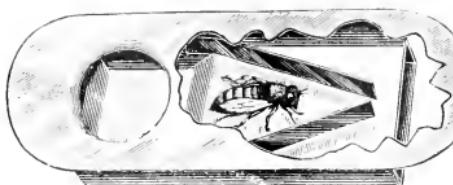
Address **GEORGE W. YORK & CO.,**
 ★ 199 Randolph St., CHICAGO, ILLS.

Golden, Italian Queens.

Unexcelled for purity, beauty and all other desirable qualities. I guarantee safe arrival. Tested, \$1.25; untested, 75 cts. Miss F. M. M'KNIGHT, Estabutchie, Miss.

Do You Want

Good, gentle and prolific bees? Then get an Albinio or white-banded Italian queen of A. L. KILDOW, Sheffield, Ill. Catalog free. 3-92-tf



Send for circular and testimonials, and read what others say of them.
PRICES: Each, by mail, with full instructions, 20 cts. Per doz., \$2.25. If, after three months' trial, they are not found superior to all other escapes, and satisfactory in every way, return them and we will refund your money. For sale by dealers.

4-92-tf Mention Review.

Porter's Spring Bee-Escape

Saves temper, time and bees.

PROF. COOK says: "No bee-keeper can afford to be without them."

WM. M'EOVY, foul brood inspector of Ont., Can., says: "They should be used in every bee yard in the whole wide world."

THOS. PIERCE, Pres. Eastern N. Y. B. K. A. says: "The time will soon come when all bee-keepers will use them."

R. & E. C. PORTER, Lewistown, Ill.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V. FLINT, MICHIGAN, JULY 10, 1892. NO. 7.

The special topic of this issue is

Smoke and Smokers.

That of the next issue will be

A Continuation of the Subject.

Importance of a Good Smoker.—Some Criticisms on the Bingham and how its Defects

Are Avoided by the Double - Valve.

J. E. CRANE.



MORE progress has been made in bee - keeping during the past fifty years than during the previous five thousand. This has been brought about largely by a few improvements such as the movable comb hive, the rapid dissemination of knowledge by bee journals, the invention of the honey extractor, of comb foundation and of the bellows smoker. I mention the smoker last, but do not consider it the least of these improvements. Whether we consider the ease and comfort of handling the bees, or the saving of time, a good smoker is one of the greatest helps of modern bee culture.

To the late Mose Quinby belongs the honor of introducing the bellows smoker. I do not know as I ever saw the first ones made. Probably they were not equal to many styles made at the present time, but to suggest and prove the value of the production of smoke by means of a small hand bellows, is honor enough for one man, and ought to be appreciated by every one who has blown smoke from punk wood all day, until his lungs seemed more like a bellows than anything else, and eyes and head very unpleasant to say the least.

Smokers there were before the bellows smoker was introduced. One I remember that was for using tobacco, but I never used it. I have an old smoker that was made 23 or more years ago. It is in the form of a miniature stove, with a tin tube to carry the air from the mouth to the base of the smoker and another to convey the smoke from the top of the smoker to the bees; but it was too clumsy to be of much value.

Now we have a number of styles of smokers, some of them very good, and others less so. I have tested some of them. One kind I remember that I paid a large price for, only to see it fall to pieces in a short time. Later, I bought a whole basketful of another kind, they were so cheap and promising, but, after one season's use, they were thrown aside in disgust. I have used other kinds with more or less satisfactory or unsatisfactory results. It is not difficult to make a smoker that will work very well at first, but to make one that will continue to

work well until worn out—ah! “there's the rub.”

There is a wide difference between a smoker that will throw a large volume of smoke with such force as to send it through a colony of bees closely clustered in cool autumn weather, or will in an instant make a cloud of smoke so dense that you can hide in it from an irritable colony of bees, and the smoker that you must keep constantly working in order to get a little smoke with which to frighten your bees.

There is also a wide difference between the smoker that you can use day after week in and week out, and month after month, without its clogging, or breaking, or burning, or in some way getting out of repair, and one that requires a continual fussing with to get even a meager supply of smoke.

It is very irritating to find your smoker clogged with creosote, or to have a spring break or a hole come in the bellows, just as you open a colony of hybrids having an unamiable temper and very pugnacious with all, and you are compelled to retreat, without much dignity or regard for appearances, to the nearest clump of trees or through a door to some safe place, and there be compelled to admit that the tiny creatures are masters of the situation.

Let's illustrate; and we will take the Bingham as illustration. The Bingham is chosen not from any desire to throw stones at it, but because I have long considered it the best of the smokers advertised in the bee journals; and, when new and in good working order, it does most excellent work—but is not perfect. As I said, when new it works well, but if used freely with plenty of fuel you will finally notice that it does not work quite so well, and it continues to work harder and harder until you come to the conclusion that it needs cleaning: a conclusion that should have been reached before. You push out the wire cloth stretched across the air passage from the bellows to the fire barrel, and you wonder it went at all. If you have warm water at hand you can clean it readily: if not, and you do the work well, you will find it a slow job. But you succeed, and again your smoker works very well. After awhile, even though the wire screen has been recently cleaned, you are sure that the smoker does not work as well when new, and you decide that the passage must be getting filled up. To clean out this passage it is necessary to remove the grate and use a bent

wire; or, as I have done at an out-apiary, drive a nail through the end of a stick, and use that. But when the smoker reaches this condition it never seems to work quite as when new.

Sooner or later a spark gets through the wire cloth into the bellows and sets the leather on fire; or one or both springs break.

This has been my experience with the Bingham. To show that this experience is not isolated I will say that a tinman here in town told me, sometime since, that, before he was burned out, he kept a supply of old clock springs on hand with which to repair Bingham smokers.

The wire cloth arrangement to keep sparks out of the bellows does not keep out the smoke, and sometimes the sparks get in. At best it is an annoyance, and often a nuisance, to be put up with patiently if we must, but to be laid aside if some better way can be found to keep the sparks and smoke from the bellows.

So far as I can remember, all the smokers, with one exception, that I have bought either choked up with creosote, or the bellows leather was burned by sparks, or they fell to pieces, and in the exception noted the smoker was so poor that I could not even use it, or only with great difficulty.

It will be readily seen why I was led to experiment and to use two valves in a manner similar to the plan illustrated in the June REVIEW. But even this arrangement was not faultless, although it gave me much greater satisfaction than others. In this smoker, as illustrated, it is quite difficult to remove the air chamber, and should the valve inside in any way become clogged it would be difficult to clean. If the air chamber is made more movable there is a possibility of its causing annoyance by coming loose while working, I have, therefore, changed the arrangement in such a way as to get entirely rid of these difficulties. As now made, it works nicely and suits me. If properly used, no sparks or smoke can get into the bellows. There is no wire cloth or small metal passage-way between the bellows and barrel to become clogged with creosote. The springs will not break. There is a strong draft. But I will not go farther. I have sent a smoker to the editor of the REVIEW, and he can judge disinterestedly of its merits, and report. If it has no advantages over other smokers, it may as well pass into oblivion. What we

want in a new smoker is that it shall be decidedly better than any on the market.

As fuel, I have found nothing so satisfactory as the sawdust from a section machine. It is more like fine excelsior than ordinary sawdust. That from a shingle mill or a clap-board mill would, I should judge, answer equally well. If dry it burns freely and gives a large amount of smoke; it stays in place in the smoker, and continues to burn for hours if the smoker is not in use.

Hard wood split fine works well in theory, but not in my practice. As soon as burned enough to become loosened, each particular stick seems bent on getting out of the smoker. Some of them usually succeed, the fire becomes demoralized and goes out. Punk, when partly burned, is apt to fall into the small end of the smoker and stop the smoke. Dry leaves burn well but do not last long. Dry grass works well, and I fre-

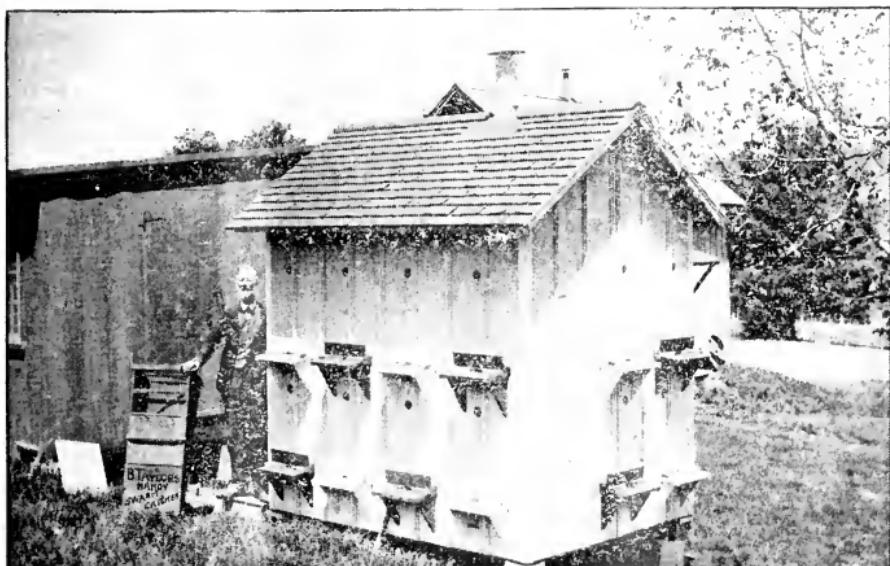
A Small House Apiary that Promises Great Things.—Graphic Description by Its Enthusiastic Owner.

B. TAYLOR.



THE engraving of the house apiary makes everything connected with its outside arrangement so plain as to scarcely need explanation. The entrances are so constructed as to be ready for the instant application of the swarm catcher.

The catcher and the bee escape are, I think, the keys to the successful management of the house apiary. The automatic or self-hiver would be nice, provided it could be



TAYLOR'S TWELVE - COLONY HOUSE - APIARY.

quently use it. If I could not get what I now use, I should prefer fine planer shavings or rotten wood.

MIDDLEBURY, Vt. June 28, 1792.

[For illustration and description of Mr. Crane's latest valvular arrangement for smokers, also editorial comment thereon, see editorial department.—Ed.]

made to work as represented. After much experience I wish to be put on record as saying that any device that catches the queen and allows the bees to fly is all nonsense in a yard where two or more swarms are liable to come out at the same time. If I could have only one swarm at a time I could make such a hiver a success. With swarm catchers it is necessary to watch the apiary, but

with a house apiary of 50 or 100 swarms, with everything in readiness, I can sit in the shade and watch for and control all swarms with little work and big pleasure.

The holes over the hives are three inches in diameter, and are covered with a slide on the inside. They are intended to furnish ventilation when work is being done on the inside, as well as to give a place of escape to all bees that get out of the hives while being handled. The door is in the end where your humble servant is seen standing with uncovered head, as though he feared that the photographer was going to "shoot" him, and be wanted to fall with his beloved catcher near by. On the opposite side of the building is a window with a sliding sash of glass and revolving wire screen which can be opened or closed at pleasure. The ventilator seen on the roof is to let all smoke out of the building as quickly as possible, as well as to be used as a chimney if a fire should be needed in winter. I bought a small stove last fall, expecting to use it to prevent dampness, but everything remained perfectly dry without the use of artificial heat. I attribute this result largely to the thorough ventilation.

I expected annoyance from smoke, but find that by throwing open the door, window and ventilators, the inside remains nearly as free from smoke as does the open air.

You would be surprised to see how little handling is really needed. I am also surprised to see with what impunity I can handle even the crossest hybrids in the house. I am also pleased with the fact that not one-fourth as many bees get out into the house as I expected would get out.

I use the small, double-brood-chamber hives in the house, but, when ready, shall use the hives mentioned last month in connection with the revolving hive stand. I invented them expressly for this purpose, but cannot use them this year. I shall not consider the house apiary fairly tested until such hives have been used.

I will say that the house apiary, even this poorest of all springs here for bees, contains twelve booming colonies. I think this is largely explained by the fact that I had a small feeder packed in the sawdust on top of each hive, so that I could feed all the bees in five minutes without disturbing a bee. I gave each colony about half a pound of syrup daily for several weeks at an aggregate cost of 50 cts. per colony.

I am greatly pleased with the house apiary and shall continue the experiment until success or failure is fairly established; and when I reach final conclusions based on exhaustive experiment, bee-keepers will be told the truth.

In the picture, my iron covered house for storing and curing comb honey is visible at the left, and a glimpse of the shop is seen at the rear.

FORESTVILLE, MINN. June 17, 1892.

[An illustration and description of the revolving, non-swarming hive - stand will be given in the next REVIEW.—ED.]

Rotten Elm and Excelsior as Fuel.—The Abbott Cold Blast Smoker.

R. B. LEAHY.

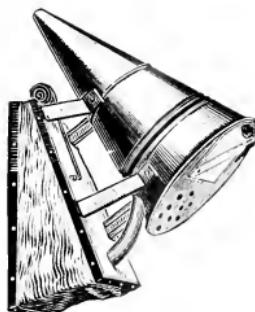


IT IS generally conceded that smoke is one of the essential assistants to successful bee - keeping. It may not be absolutely necessary to use smoke in the manipulation of bees, as I know of bee - keepers who actually do not use smoke at all; but time is a commodity which, if carefully saved, and properly used, amounts to dollars and cents: and, as smoke in the apiary is a great time saver, it is necessary to the greatest success.

As to fuel, I hardly know which is best, as I have not used a great many kinds that others have recommended very highly. When I lived on a farm and had access to timber where rotten elm trees lay in such abundance over the ground that a wagon load could be picked up in a few moments, I then used rotten elm and thought it was the best. I have a strong partiality for it yet, and for a number of years after I moved to town I would either send or go to the woods to get rotten elm for my smoker fuel. I became tired of this after a while, especially as there usually is more or less dust and fine particles in it, and after it is broken up there is an unsightly mess about the work-shop. This fuel would have to be sifted, or the dust would invariably find its way out of the end of the smoker all over the frames and combs. This

induced me to cast about for something better and cleaner. By wetting it and stuffing the smoker full, almost to the door, and using only enough dry Excelsior to start with, I found it very handy and convenient as a smoker fuel. It would last for hours if the fuel was carefully prepared and the smoker properly loaded. Next to this, for those who have only a few bees, I would suggest cotton rags, twisted up into a hard roll. Of course those who have large number of bees would need a large amount of cotton rags, and would find them expensive, as they would be hard to get. A customer of ours, who was here the other day, says he uses crushed corn cobs and wants nothing better.

As to smokers, I cannot say from experience which is the best, I have used Clark's cold blast smoker mostly, and for a cheap smoker it is good, but not so good as the Abbott. The Clark's cold blast needs overhauling too often, as the air tube becomes stopped up from the accumulation of creosote, especially so in damp weather.



THE ABBOTT SMOKER.

The Abbott smoker overcomes this trouble. As shown in the cut above, the blast tube enters below the grate, runs the entire length of the fire-box, and projects about one-eighth of an inch through the fire cap. This, you see, prevents the possibility of creosote in the blast tube.

The first smokers made on this plan were made by us for Rev. E. T. Abbott of St. Joseph, Mo., who had us make a lot for him last spring, with several other changes. Hence we call it the Abbott Smoker. When I first saw the model presented I supposed the lower end of the brass tube would become so hot as to burn the wood of the smoker bellows. This induced me to experiment, but upon heating the fire-box so hot as to melt the tin coating, causing it to run down the fire-pot, I found the brass tube below the

fire-box to the bellows cool enough to hold my hand to it without burning. The cold air constantly blown through the tube prevents it from becoming unnecessarily hot, and when not in use there is no danger of its becoming hot enough to injure the bellows a particle.

There are several hundred of these smokers in use. They are past the experimental stage and are pronounced a success, bringing words of praise from many and complaints from none. For a cheap smoker, I will say that there are none better, if any are its equal. I have no further interest in the above smoker than the desire to see a meritorious and actually good article generally used. What I have said in praise of it comes solely from this desire, and not from solicitation by or interest in any individual concerned in its success from a financial point of view. We do not keep this smoker for sale, and those wishing to know more about it will address their communications to Rev. E. T. Abbott, St. Joseph, Mo., who is the inventor and keeps them in stock for his customers.

HIGGINSVILLE, Mo.

June 28, 1892

[Unless there is a valve in the blast-tube I should think smoke and sparks would be sucked back into the bellows.—ED.]

Comments on a Beginner's Day-Book.

No. 7.

E. E. HASTY.

THE first part of the month of July was a time of worriment with many swarms. There was an unusual proportion of abnormally acting swarms, that went to wrong places, and did wrong capers; but perhaps it is as well not to worry the reader with much of the history. The general result of the experience was, I think, to convince me that returning supernumerary swarms in the usual way was not correct practice, and that something else urgently needed to be devised.

" July 1st, 1880. Fair, but somewhat threatening; rain at eve. Thermometer 60° 80° 70°. Run 3 lb 1 oz. Loss by night 9 oz. Found that some of my foundation sheets were too long, and have bulged badly. Four swarms. 11-4 gave a prime repeat. I had just been going through them and cutting out drone comb."

The scale hive had swarmed only four days previous to this record, and for the remaining fielders to get over three pounds in one day was quite phenomenal for my location. No-

tice the weather. It is when rain is coming, and coming in a definite sort of way and near at hand, that we get our largest honey yields. This is the foundation of the popular weather proverb that rain will come when bees work late at night. I tried long and earnestly to realize something at predicting weather by the records of the honey scale. It amounted to no more than the signal service predictions do. Too many exceptions and perhaps-es.

I guess most beginners at bee-keeping are akin in getting their foundation bulged—and distorted until the cells are ever so much wider one way than they are the other—and then they get out of the difficulty by using wire. I revolted against wire, and have never used any. I find from year to year that my bees keep me supplied with good combs without the expense of brood foundation. I use some section foundation; but I have decided that it is unprofitable (in my field) to use more than very little pieces for starters. Am almost persuaded to abolish the little pieces too, and use starters of virgin combs. The object of this would be to get rid of the taste of beeswax (and soap) which my tongue can detect readily, even if my customers do not notice it.

A prime repeat is my phrase to describe the case where an ordinary prime swarm itself sends out a swarm (with the same old queen) when they get their hive full of comb and brood—sometimes before. They are rather common with me; and I would like some other greenhorn to tell me how to prevent 'em. In this it was 29 days from the time the swarm was hived until it sent forth a swarm. But they were sufficiently angel-white to stay when they were put back where they came from. It won't do to expect such a result every time. Now as to swarming being stimulated by frequent opening of the hives. The matter is one of quite a little importance—among the secondary questions that is—and appears not to have been decided as definitely as the case probably admits of. Those who are hungry for practical problems to solve might take it up. While I cannot prove pro or con, the sum total of my experience has made me pretty strong in the opinion that the swarm fever is made worse by frequent overhauling of things.

"July 2nd. Found the first filled sections."

A few sections of honey may be a small thing to cackle over; but as cackling is a normal and healthful exercise—and seldom to

be enjoyed if we wait for a whole nest full of eggs to be realized at once—let us cackle. Let us rejoice when the first fruits of our harvest come in. Yes, more, let us put our rejoicing in the devout form of thankfulness. Many are the opportunities we have to rejoice, and to realize that God is looking on, which are lost by the heedless letting of them slip through our fingers. Most readers will think July 2nd. pretty late for the first finished honey. It is all right for this location. As for the present year 1892, July 2nd. is quite near as I write, and the combs have on their winter blackness yet; and hive after hive has only a few dozen cells in which honey can be seen at all.

"Sunday, July 4th. The discontented bees at 4-8 swarmed again, and after remaining out a couple of hours rushed into stand 6-7. Basswood has been in bloom a long time, but a fair per cent. of the buds are not yet open, and I saw two trees which had not yet begun. White clover has been kept in fine condition by the wet weather, and many bees work on it notwithstanding the basswood. Was surprised to see that my bees some of them went beyond the creek and its basswoods to work on Mr. Miner's chestnut trees."

This swarm I presume was left to itself for two hours because I was at Sunday School. A badly disgruntled lot they were. They swarmed six times in six days—missed one day, but got up two swarms another day to make it up. After they had forced themselves into 9-7 they found they had changed the roof over them "but not the spirit that was within them," and came out next day. The last I find of them in the records they were in a box under the chestnut trees, where I think they remained without doing very much the balance of the season.

A very valuable trait of the basswood it is that the individual trees disagree so much in their time of blooming. With this Sunday in July I commenced the habit of recording the condition of the bloom each Sunday. My long walks to two different Sunday Schools in different directions allowed me to see what was in bloom as I could no other day of the week.

"July 7th. Had noticed yesterday and to-day a small but compact bunch of bees at the corner of 10-1, where I had put in with the residents an after swarm with a virgin queen. They had the queen balled in this bunch. Rescued her, and put her over the frames in a cage. This plan of renewing an unprosperous colony seems to be worthless."

Alas for the long procession of nice plans and ways that would be so handy if only they would work according to program! When swarms are so plenty that the aparian feels like the old woman that lived in the shoe it

would be quite handy to give one to each unprosperous stock he might have, and see them booming; but my first season's experience at it is boiled down as above. Perhaps I was too hurried in my judgment. With a sufficient amount of care and fuss it can be made to work, and probably it is sometimes worth the doing.

July 13th. The Italians at 10-9 gave a swarm with fertile queen. Hived them in a box to return. This is the second round of swarming from this stand."

Second round of swarming is still more vexatious than the kind of repeating referred to a little while ago. We think it rather a hard fate if a young queen of the current year, at the head of a colony that has been through the regular swarming excitement, will not keep sober and attend to business; but in this swamy locality sometimes they won't. In this particular case however they sobered down on being returned, and went to work and stored 35 pounds of section honey. Their first round of swarming began May 12th, one day over two months previous.

July 17th. Found the colony 2-1 almost extirpated from swarming (6 times) no brood, and only four counts of bees. They must have either brood or a swarm given them. Later I put in a little virgin swarm from 10-8. Could not see that any resistance was made."

Two days later I put in another. So here already is a case where the tactics of using little swarms to support old colonies was not a failure. The stock got on its feet and made a trifle of surplus—some four pounds. The original colony did not part with six lots of bees in their six times swarming, but only four.

July 21st. Cool day, partly clear. Thermometer 52° 53° 60°. Rain not appreciable. Loss 7oz. Made some temporary hives holding the Gallup frame out of some old condemned hives."

This was a good stroke of policy, and it is capable of being played elsewhere sometimes. Those unapproachable, howling humbug hives which the smooth-tongued agent persuaded you to invest in—to leave them in a pile under the drip of the shed, until they rot down, is more consonant with one's feelings, but to make them "catch mice" is more profitable unto you. Get your hammer and saw, and rattle trap the interiors until they will hold the regular frame of the apiary. Good enough for late swarms that are to be plundered of whatever they have at the end of the season. This sort of plundering does not necessarily mean slaughter. The bees can still be saved by a wholesale arrangement of putting ten colonies or so together.

"July 30th. Began the policy of covering up my champion robbers at 2-7 and 9-3 when opening hives."

Here is a hint, not entirely destitute of plausibility, but which probably will not be very widely useful. It is rather seldom that any two or three colonies in an apiary are enough worse than their neighbors at meddling where the apiarist is at work to make it worth while to proceed against them by writ of bed-blanket injunction.

"July 31st. Made the first hive-shade by tacking a cloth to two strips and driving them into the ground."

This is a cheap and practical shade; and by driving them at the proper slant they do not need to be moved when opening the hive as the shade-boards in current use do. Later on I found it better to use a larger piece of muslin and three strips. My present cloth shades—not so good, but more handy—are tacked directly to the projecting edges of the hive roof. To complete a satisfactory shade these need to be supplemented by a small board on the roof in addition to the curtain of muslin.

RICHARDS, OHIO.

June 29th, 1892.

Bingham Smoker the Best, but it is a "Tumble Heels."—Burlap and Excelsior for Fuel.—Dear old "Uncle John."

RAMBLER.



THE June REVIEW was received while in town to day, and I will try and get in a word on that smoker question. I have used the Bingham for several years, and always have given it my unqualified endorsement. It is a

very durable smoker, and, in my hands, will out-last a Clark smoker three to one. However, I have one fault to find with it, and to remedy that fault I have been thinking that my next purchase would be a Hill smoker, but I don't know as I would be any better off with that. The Bingham smoker is an everlasting "tumble heels." You may set it down upon an apparently level place, and, with the least joggle, away it goes to the ground, the nozzle flies off and the fuel spills. Perhaps I am careless about jog-

gling it, but that's the way it uses me several times a day. I like the Manum improvement which in a measure overcomes this tumbling propensity. It is the attachment of a hook made of hoop iron projecting from the upper portion of the bellows. This allows the smoker to be hung on the side of a hive or even hung to the clothing and carried when both hands are full.

Rotten wood is, I think, the best fuel, but in the country where I now am, rotten wood of the right kind cannot be obtained. Burlap sacks are used to quite an extent, and when once started and pressed in snug, a piece of burlap will last a long time. J. F. McIntyre uses barley straw. A good fire is started and then a wisp of straw rolled tight and moistened a little is inserted, and will last many hours. Excelsior taken from packing cases is also used.

In many apiaries in this State a continuous-blast, vindictive smoker is needed. Bees are exceedingly hard to smoke, and those who advocate and practice giving only a puff or two of smoke would meet with a hot reception.

That is all I wish to say about smokers, but I wish to say a word now about Uncle John Andrews. When I saw that little picture of his on page 159, I felt like throwing my arms around his neck and hugging him. In that picture Uncle John looks as though he might speak. How happily we have roamed the shores of Lake George: camped in camp Andrews, and hauled out the lusty pickerel and trout from the pure waters of the lake (trout are Uncle John's favorite), and now I am 3,000 miles away from those aforesome haunts, and may never meet my old friend this side of eternity. That a kind Providence may bless the whitened head, is the wish of the

RAMBLER.

A Fair and Generous Comparison of the Qualities of the Bingham, Clark, Hill and Crane Smokers.

ERNEST R. ROOT.

HAVE experimented much with smokers and have been quite closely connected with the manufacture, so far as it relates to details of construction, of some hundred thousand. I have experimented with nearly all the smokers ever advertised, from the old original bellows smoker, first advertised by father Quinby, to the perfect smokers of to-day. I suppose I ought to know

something about smokers. But may be, before I get through, you will conclude that I do not.

Naturally enough, I ought to recommend and praise up, above all of its competitors, the smoker in which I am particularly interested; but my opinion can hardly be biased if I give the palm to the other fellow's smoker—the Bingham—in the manufacture of which we are in no way interested. I am sure I would very much rather give the preference to our own—the Clark—but I am afraid if I did so our boys in the apiary would ask me why I pick out the Bingham when I propose to "tackle" a colony of cross or uncertain temperament, or why it is that it is generally used by them in the apiary.

Yes, the Bingham is used more largely in our apiaries than the Clark. It is strong and well made, gives a good volume of smoke, of the subduing kind and is always prompt for emergencies. It burns any kind of fuel, although our boys very much prefer the excelsior sawdust, such as comes from the hand-holes in making hive-bodies.

The Bingham has one distinctive feature that, in my mind, makes it superior to all other smokers; and that is, the absence of any connecting tubes between the bellows and fire-box, or stove. Just so sure as the tube connects the two, as in some of the hot blast smokers, it has a tendency to become clogged with creosote, and to carry smoke into the bellows; with the result that the bellows valve becomes stuck up and wheezy. We have a bellows that has been in use, in connection with the Bingham fire-box, for the last three or four years; and the leather valve is just as clean, apparently, as the day we began using it. I may be mistaken, but I think you will not find a like condition in all other smoker bellows that have been in use for the same length of time; therefore, in hot blast smokers I would object to the use of any connecting tube between the two parts of the implement. The very absence of such a tube in the Bingham prevents smoke from entering the bellows, and causes it to last and do good service. The only disadvantage is, that the blast is considerably weakened; although for general manipulations of the hive it is strong enough. For this reason, Mr. Editor, I should be afraid that the canals, or passageways, of the Crane smoker would in time become filled with creosote, and the valve likewise more or less

clogged. Mr. Crane showed me this smoker, I believe, while I visited him two summers ago; but I regret very much that I did not take time to investigate more thoroughly, and I shall do so at the earliest moment.

But there are some advantages which the cold-blast smokers (particularly the Clark,) have over the Bingham, or any of the hot-blast smokers with which I am acquainted. Aside from the fact that the blast is cold, it has very much more force. With an ordinary Clark, a stream of smoke may be forced through four or five hive-bodies or eight or ten supers, for the purpose of driving the bees out of the same. Again, with our cold-blast Clark, or the Hill—a very excellent cold-blast smoker by the way—you can start the fire very readily—much more so than in the hot-blast; and in replenishing they do not require the handling of a hot cone, although Mr. Bingham has made an improvement in his smoker by the use of a spiral-spring handle, by which the cone may be removed without burning the fingers. This safety device, while I at first liked it, I do not think is strong enough to endure the twisting and pulling often required to remove the cone top. The Clark also, when well going, yields a smoke for pungency nearly equal to the hot-blast, and it sells at a price considerably lower. For ordinary manipulations in the apiary it answers very nicely. In the last year or so, it has been improved considerably by the use of perforations in the fire-box, not only to increase the draft, but to prevent fire dropping, something that used to annoy when the door was revolved enough to allow a sufficient draft. The new blast-tube is so large it rarely clogs up so as to make much trouble, although it requires to be cleaned occasionally; and the valve, in the bellows, becomes in time a little wheezy from creosote, although it may be cleaned with a little care.

For fuel we have tried rotten wood, hard wood, pine sticks, sawdust, shavings, excelsior, paper, rags, peat, corn-cobs, and a peculiar kind of sawdust that comes from making hand-holes with a wabbling saw in bee-hives. The last named we find to be far superior to all the others. It lights quickly and smoulders enough to give quite a dense blue smoke. It is readily obtainable of the supply-dealers. It should be remarked, however, that the finer sawdust should be carefully sifted out.

MEDINA, Ohio,

July 7, 1892.

A House Apiary that Resembles a Passenger Coach and How it is Successfully Managed.

JAS. HARKER.

I HAVE successfully used house apiaries more than twenty-five years. The first one I made was about seven feet wide, six feet high, twenty feet long, and held forty-eight hives. The one I'm now using is forty feet long and resembles a passenger car. The hives along each side might be compared to the seats in the car: that is, the hives *represent* the seats and there is an alley-way down the center. I use two rows on each side. The bottom rows sit on the floor; then half way up is a shelf on which the others rest.

The house is used only in summer, it being only one thickness of stock lumber nailed up and down. Each alternate board has a bee entrance cut in it. Up to each entrance I push a hive so snugly that no bees can get into the house to bother while at work with them.

I enter the house from the south end. At the north end there is nothing except a small opening for ventilation in the very hottest weather.

About three feet from the house I have a row of grape vines that I throw entirely over the house, making a complete shelter during the hottest weather, and it looks like one massive grape arbor with an entrance in the south.

Now on these shelves (previously mentioned) I set my hives, and I can work comfortably in there either by night or by day.

I do not know how the house would answer for raising extracted honey, as I run mostly for comb honey.

I place my sections on top of the hives and as fast as filled or nearly so I raise them up and on goes another super. On some of them I have had 120 sections, and others, upon which I used large sections, gave me over 130 lbs. of fine comb honey.

My section cases are glazed so that I can see at a glance which colony needs another case. I use no cap or covering of any kind more than a piece of card board or bee-quilt or anything to keep the bees in the top case.

Some people have said bees will not work in the light: this is not true, for my bee house door stands open night and day during hot weather, and it is very seldom any bees will be seen trying to get through the glass, but all seem quiet and happy.

If a swarm issues and I want increase, I take the old hive and place it at a vacant entrance on the opposite side of the house, set the swarm on the *old* place and secure a powerful strong colony at the old stand in a few hours, as all the field bees will be with the swarm in a short time.

In comparing the house to a car I ought to have said, "all but the glass," as I use no windows, no screens or light of any kind. When I shut the door it is as dark as night. If the bees come in the door when I am at work I close the screen door and go on with my work. I have the screen door arranged for escapes while taking off honey, also one or two other escapes, simply a funnel made of screen wire: and I can take off from one to five hundred lbs., close the screen door, and sometimes every bee will be out in one hour, or two at most. In or near the top of the door I have several holes made through the screen, and on these holes on the outside small cones of wire like thimbles are stuck. I sometimes lift off one or two dozen cases, lay them on one edge, go off and do anything I wish to, and in a short time all is clear. Of course, I face them to the light, and there being no other light they all make to the door, run up the screen, out of the small cones, and back to their own hives; and should any try to return, (for of course many of them will fill themselves with honey and then wish to come back), they alight on the outside, run up to the top, fly off and try again, but never go out on the end of the cones to come in at the end.

In looking over the REVIEW I see some are giving plans for a bee-house although they do not use them as yet. Will you allow me to drop a hint or two? If I were to build one as I would *like* it to be, it would be something on this plan: Select a south slope, build a wall running east and west as long as needed for the number of colonies. For the front use any kind of frame-work. I should prefer it double if to winter in; if only for summer, single thickness would answer. Put a door in each end. The only objection to this arrangement is, we only have the use of one side, but for everything else I think it is good.

The houses I am using stand endwise north and south. I use east and west sides only, and have objections to those running north and south. I will hereafter build them running east and west.

ARGYLE, Wis.,

Jan. 10, 1892.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

TERMS:—\$1.00 a year in advance. Two copies, \$1.90; three for \$2.70; five for \$4.00; ten, or more, 70 cents each. ~~£2~~. The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, JULY 10, 1892.

DOUBLE GLASS in a wax extractor causes 10° greater heat than a single glass, so says Ernest Root in *Gleanings*.

AN OLD FASHIONED, white clover, honey harvest is what this locality is now being blessed with for the first time in five years.

NARROW BOTTOM bars ($\frac{1}{2}$ or $\frac{3}{4}$ inch) cause the bees to build their combs clear down to the bottom bars and attach the combs to the bottom bars.

GLEANINGS says, editorially, "Whatever may have been our position we recognize, and are glad to encourage, all useful patented inventions." Good.

RAMBLER suggests in *Gleanings* heating with electricity the knife used in uncapping combs for extracting. Mr. Root is probably correct in thinking that a current sufficiently strong would be too expensive.

SELF-HIVERS placed in front of the old hive in such a manner that the working bees pass through the hiver while on their way to and from the hive, give promise of catching full swarms. The trouble with the old kind is that many of the bees return to the old entrance.

EMPTY COMBS and their care have received some discussion of late. Instead of sulphuring the combs to destroy the bee moth's larvae, C. H. Dibbern douses them in a trough of cold water, where they remain two or three hours. A quick, swinging movement of the hand throws out the water, when the combs are piled loosely to dry. This does away with the odor of sulphur, and washes out impurities.

EMMA WILSON tells, in *Gleanings*, how she cleaned the propolis from separators and supers by immersing them in a solution of lye made boiling hot. If the supers were painted, seems to me it would take off the paint too.

THE " FEATHER EDGE " on the Hoffman frame is criticised in the *Progressive Bee-keeper*. In the corner where the edge strikes the opposing frame will be a grand place for stowing away propolis. That is the way it strikes me.

E. FRANCE allowed a swarm to raise no brood for a period of 96 days. At the end of this time (Aug. 24) the bees were allowed to rear and hatch brood. Contrary to his expectations they wintered well and on May 30 were a fair colony.

FOUL BROOD is not caused by decaying brood, or by disturbing it by extracting from the brood combs. E. France says in *Gleanings* that for twenty years he has been extracting from combs containing brood and has yet to see a case of foul brood.

GRANULATION of honey is not a proof of its purity. Neither is its non-granulation a proof of its adulteration. I am glad to see by reading the replies in the Query department of the A. B. J. that most of the "big guns" are beginning to realize that the matter of granulation is of little value as an index to the purity of honey.

MICE GNAW the combs in a hive to enable them to reach the dead bees in the combs. D. A. Jones says that if the combs are placed far enough apart to allow the mice to get at the bees without cutting away the combs, the little rodents will clean out the dead bees " slick and clean " with no injury to the combs.

IN DOOLITTLE's plan of having artificial queen cells accepted in an upper story with a laying queen in the lower story, see that the cells are well supplied with royal jelly (taken from other queen cells) before the larvae are transferred, that there is a comb of unsealed larvae each side of the cell caps and that the bees are fed liberally if no honey is coming. Doolittle gives these cautions in *Gleanings*.

GALVANIZED IRON ought not to be used in making vessels for storing honey. What makes this metal remain bright is because it is gradually being eaten away. The zinc eaten away enters the honey. Of course, in a large vessel, the quantity that enters the honey is so small in proportion to the amount of honey that it is not perceptible. But it is objectionable only in a lessened degree.

SEVENTEEN-HUNDREDTHS of an inch is the right size for the perforations in zinc to make it queen excluding, says *Gleanings*. By the way, some are asking whether it is the thorax or the abdomen of the queen that restrains her from passing through the perforations. I once caught a queen and forced her into an aperture between two flat surfaces placed 5-32 of an inch apart. When only the abdomen was between the surfaces she could readily withdraw it—it was the thorax that held her. The abdomen is soft and yielding, to a certain extent, and can be flattened out slightly—not so the thorax.

APIS DORSATA may yet be in this country. Frank Benton says in *Gleanings* that the U. S. government will probably attempt their importation. Whether they are capable of domestication, or of any special value when domesticated are yet unknown. From their large size they could probably get the honey from red clover. If they should prove of no value in domestication, Mr. Benton thinks that if turned free in the South they would probably produce large quantities of honey and wax, the latter product forming an important article of export in India.

DRONES CONGREGATING in large numbers at a considerable distance from their hives, and creating such an uproar that queens are attracted to the spot, are again being discussed in the bee papers. That they do so congregate there is no doubt, and it is quite probable that queens are sometimes mated at these "trysting" places, but they are also mated right in the apiary, as my brother and myself have both witnessed with our own eyes. The first bees that I kept were black, and half the young queens met Italian drones from colonies that were at least a mile and a half away. If there were drones of a different strain nearer than four miles, I should expect

an occasional mis-mated queen. The character of the country may have something to do with the distance.

SEALED COVERS and absorbents still occupy considerable attention in the journals. Bees must be kept dry. In a warm dry cellar, with the hives raised from the bottom boards, it matters little, so far as the bees are concerned, whether the covers are sealed or not. Out of doors the covers must be *protected* if they are left sealed, then they will be warm and there will be no condensation of moisture *over* the bees; it will take place at the sides and corners of the hive or near the entrance. If the cover is removed and the bees covered with some porous packing, the moisture will pass up through the packing and condense above it. Packing should never be used with the intent that it should absorb and *retain* the moisture. There must be abundant ventilation above the packing to allow the excess of moisture to pass off.

THE NORTH AMERICAN might meet in Washington the next week after the National G. A. R. Encampment, which would be about Sep. 27th for the bee-keepers to meet. This date is suggested by Frank Wilcox of Mansfield, Wis. If this date will allow us to take advantage of the reduced rates resulting from the G. A. R. meeting, then that is the time to hold the meeting. I am already planning a programme, and shall be very glad of suggestions. I wish every reader would send me a list of the topics he would like discussed and of the men that he would like to have lead in the discussion. I shall work hard to make the coming meeting one of the best that the Society has held.

One thing more, let each who expects to attend write to me and let me know, that a list of all such may be published. Nothing increases the attendance like knowing in advance that "So and So" will be there.

JACOB T. TIMPE has been "shown up" by the *American Bee Keeper* and by *Gleanings*, as a man that has received money for queens and not sent the queens or returned the money. I have always felt that Mr. Timpe was honest, and have several times defended him to his complaining customers. I suppose that he used the money that came in for queens, expecting to be able to fill the orders, and then the poor season prevented,

and he had neither queens nor money to send. I finally wrote him a long letter and plead with him as with a brother to straighten up these matters in some way. If he could do no better he could tell his defrauded customers exactly how he was situated and when he *could* pay them. I told him that unless he did this, the matter would eventually be given to the public, when his business as a queen breeder would be ruined. No reply came to this letter, but complaints against him *did* continue to be received, and then his ad. was dropped from the REVIEW.

ONE WAY IN WHICH SELF-HIVERS DO NOT
FILL THE BILL.

I have received a nice, long, chatty, "rambling" letter from "Rambler." He starts out in this fashion: "This finds me sitting by the side of a large honey tank, in a lone California apiary, drawing off honey into square tin cans, two in a case. It takes just 16 minutes to fill two cans, and to fill in the spare time, I'll waggle the pen at you. While sitting here listening to the roar of 200 strong colonies of bees, I find myself thinking of the many problems in bee culture, particularly of the efforts toward non-swarming and self-hivers." After mentioning the cost of self-hivers and the "too much machinery" point against them, he says: "There is one vital point that I have not seen mentioned. In a large apiary there are frequently several swarms in the air at the same time. Suppose that these swarms have no queens with them. In the first place, they will spread themselves over a large space and keep on the wing a long time. The bees become mixed, and, if they alight, all will cluster together. The advocates of self-hivers would lead us to believe that each swarm will single out its own hive and return to it. The facts of the case are quite contrary. Nearly all of the bees will follow the loudest hum and nearly all that are in the air will concentrate upon one hive."

What "Rambler" says is true. The place for the self-hiver is in a small apiary that must be left alone except at stated intervals. In a large apiary there ought to be several swarm *catchers* and some one to manipulate them during the height of the swarming season. As B. Taylor said in the REVIEW, last season, any system that allows the swarms to fly and mix, in a large apiary, is faulty.

USE OF THE FOUNTAIN PUMP.

In the June REVIEW E. E. Hasty spoke rather disparagingly of the use of a fountain pump for controlling swarms. Because the bees swarmed and cut up their capers in a shower, he argued that the feeble spray of a fountain pump would not amount to much as a controller. He still further fortified his argument by giving his experience which was against the pump. While swarming bees might go on and carry out the programme if a shower should begin operations just as they began theirs, it is also true, according to my experience, that a swarm can be controlled by the use of a fountain pump and a plentiful supply of water.

The first year that I kept bees, a swarm came out and attempted to leave (as they usually do after being once hived). I followed with a looking-glass. The sun was not shinning very brightly, and the best that I could do was to confuse them somewhat. After following them about forty rods, we came to a small brook. I dashed ahead of the bees, and, scooping up the water with the mirror, threw it among the bees. They never crossed the "Rubicon" but hung themselves upon a thorn bush. I cut off the branch and bore home the cluster with feelings of triumph which were probably equalled only when, as a "trapper-boy" of eleven, I caught my first muskrat.

When my brother and myself were in partnership raising comb honey we did not, for the first two years, clip our queens' wings. If ever the Whitman fountain pump was given a trial, it was during those two seasons. In one season in particular, it seemed as though three-fourths of the swarms hived came out in a day or two and started for the woods. Some of them were re-hived three or four times. No swarm that was seen in time got away from us. In fact, I believe that only one actually succeeded in getting away, although some of them gave us much trouble and got as much as forty rods from the apiary before they clustered. I have even compelled them to pile themselves up on the *ground*. We had a barrel full of water in the apiary, and two large tin pails. One of us brought water while the other worked the pump. With this arrangement it is almost impossible for a swarm to leave if it is taken in hand in time and not allowed to get beyond control. After a swarm is high up in the air and going raidly, it is very difficult to stop it. The operator has to run to catch up

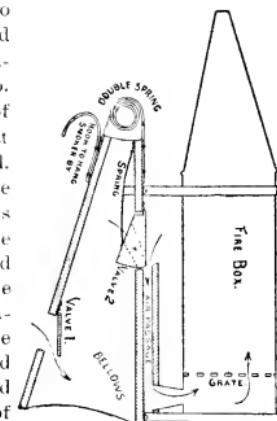
with the bees, and by the time he has given them three or four "squirts" he has got to pick up his pail and run again, and it's "no use." It was the experience of that season that made a "clipper" of me. In an apiary where natural swarming is allowed, I would use queen traps, swarm catchers, or else clip the queens.

HOW TO COMBINE THE ADVANTAGES OF THE HOT AND COLD BLAST SMOKERS.

The smoker discussion is going ahead of my expectations in regard to the amount of useful information that it is bringing out. At least another number of the REVIEW will be needed to give all of the good things that have been said.

It is evident that neither the hot nor the cold blast smokers are destitute of points of superiority. The cold blast requires better fuel, but will give a stronger blast; the hot blast will burn poorer fuel and the fire can be started and kept going easier, but the blast is not so strong.

Mr. J. E. Crane has sent me one of his smokers having his latest valvular arrangement. I have had it only about two weeks, but it was a case of "love at first sight." To my mind it is the best arrangement for a smoker that has yet been produced. The cut makes it so clear as to need little explanation. Valve No. 2 is a block of wood hinged at its upper end. There is a hole through it as shown by the dotted lines, and the moment the bellows is compressed the valve is forced outwards, and the outer end of the hole in the



valve meets and forms a close connection with the air passage leading to the fire box. The instant the pressure is removed, a spring brings the valve back into the position shown in the cut, thus leaving the air passage open for draft. No soot, creosote, or sparks can ever reach the bellows—the latter

are too far from the fire box for that—and the trouble from clogging is forever at rest. A piece of soft leather is glued over the inside of the valve. The piece of leather is so large that its edges extend out perhaps an inch or more beyond the edges of the valve, where they are glued to the inside of the board forming that side of the bellows, thus preventing any leakage of air around the valve. Of course, a hole is made in the leather where it comes over the blast-hole in the valve.

It is really surprising to see the ease with which a fire can be started, and kept going, and to see what a strong blast of smoke can be sent out. Then to think that it is *always* going to work this way—that there is to be no fussing, tinkering and cleaning. Perhaps I am inclined to exaggerate this point, but to me it seems a great comfort. This is the first article that I really felt as though I should like to make for sale. Of course, I shall not do it, but I wish that Mr. Crane would make them, or that Mr. Bingham would make some arrangements whereby he could add this feature to his smoker. If he would do this, he would have the most perfect smoker ever made; for, be it known, Mr. Bingham has lately added two quite important improvements to his smoker. He has added a bent nozzle that enables the operator to throw a stream of smoke



BINGHAM'S PERFECT, SAFETY SMOKER.

(Patented.)

downwards without running the risk of throwing sparks, or fire brands, or ashes among the bees. The other improvement is a coiled wire by which to remove the nozzle when it is hot. For about a month, I have had a Bingham smoker with these improvements, and they are improvements, *decidedly*. I tried to put the Bingham nozzle on the Crane smoker, but the Bingham nozzle was such a *little* bit smaller that it was

provoking. If I could have succeeded, I should have had what I consider a perfect smoker.

The man with a few colonies of bees can get along with almost any smoker, but the man whose business is that of bee keeping could afford to pay \$5.00 for a good, big, Crane smoker with a Bingham nozzle, rather than to do without it; and it could be sold at a fair profit for half that sum. If the right man should take up their manufacture, I know that there would be a mutual advantage—to himself and to bee-keepers.

DETECTING ADULTERATION OF HONEY.—SOME
INTERESTING CORRESPONDENCE
FROM PROF. WILEY.

The government chemist Prof. H. W. Wiley, has issued a Bulletin showing that out of 500 samples of extracted honey subjected to analysis, 203 were found adulterated. Leading firms, like Thunber, Whyland Co., and C. F. Muth & son were among those guaranteeing the purity of honey pronounced impure. A large proportion of the samples were California honey. It seems unreasonable to believe that honey is adulterated in California when we remember that honey is cheaper than glucose in that locality. We all know that such men as Mr. Muth do not adulterate honey. From reading the discussions that have appeared in the journals upon this subject, it is my opinion that the chemists have done their work honestly, but have worked from a false basis—that of supposing that the component parts of honey are always nearly the same and combined in the same proportions. It looks very much like the "venerable falsehood" over again, of the bees "consuming twenty pounds of honey in the secretion of one pound of wax." Honey varies greatly in character, owing to the different sources from which it is gathered. To the credit of the chemists be it said, they admit that they are puzzled to know what adulterant is used in California honey. Good authorities believe that the proportion of cane sugar in honey varies greatly, accordingly as the nectar is gathered more or less rapidly. If gathered rapidly, there is less opportunity for the secretions of the bees to change the cane sugar to glucose. If this is true, chemists who analyze honey ought to know to how great an extent these proportions may vary. All who have honey stored very rap-

idly are requested to send a sample to Prof. A. J. Cook, of the Michigan Agricultural College, that he may determine to how large an extent honey may consist of cane sugar.

After Prof. J. A. Lintner, State Entomologist of N. Y. had attended a convention of scientists at Washington, he had about decided that fruit trees might be sprayed when in bloom without injury to the bees; but after hearing the subject discussed an hour at the Albany convention of bee keepers, he decided to advise against the practice. In the same way, if Prof. Wiley could be induced to attend the coming meeting of the North American in Washington, and a discussion of the detection of the adulteration of honey could be introduced by Prof. Cook it is possible that Prof. Wiley might learn that his methods and conclusions need remodeling. As Secretary of the North American, I shall try to bring about this result.

After the foregoing was in type, the following letter came to hand from Prof. Wiley.

WASHINGTON, D. C., June 28, 1892.

W. Z. HUTCHINSON,

FLINT, Mich.

Dear Sir :

I have only one copy of your journal : Dec. 10, 1891. I should be glad to get other copies, especially the one containing the "Sugar Honey" article by Mr. E. E. Hasty; also all numbers containing references to the so-called "Wiley lie" or to Bulletin 13, Part 6, issued by this Department, on adulteration of honey.

I am, Respectfully,

H. W. WILEY, *Chemist.*

In reply to this I sent some copies of the REVIEW, told the Prof. that I was glad to get a letter from him, as I thought that it would be better if he and the bee keeping world were better acquainted. I urged upon him the importance of *knowing* that he was right and being able to *prove* it. I also most earnestly requested him to attend the coming meeting of bee-keepers in Washington, assuring him that I believed his attendance would lead to a mutual advantage. He was also invited to use the columns of the REVIEW, if he desired to make any defense or explanation. In reply, I have received the following kind and gentlemanly letter.

WASHINGTON, D. C. July 2, 1892.

W. Z. HUTCHINSON,

FLINT, Mich.

My dear Sir :

I am in receipt of your letter of recent date and also the copies of the "BEE

KEEPERS' REVIEW" which you so kindly sent. Please accept my thanks for the same.

It will be a matter of great gratification to me to meet the American Bee Growers in their convention in Washington, next autumn, and I shall certainly do so provided my official duties do not require my presence in some other part of the country at that time. I shall make, however, a special effort to be present.

I am aware of the prejudice, existing in the minds of many bee growers, against me, owing to the statement contained in my article in the "*Popular Science Monthly*," eleven years ago, to the effect that pure artificial honey was made by mechanical means. I regret exceedingly that I made this statement although at the time I was thoroughly convinced of its truth. As I say in Part 6, of Bulletin 13, an experience now extending over many years has never brought to my attention a single sample of such adulterated honey. I am very glad that your journal has not taken part in the personal abuse which has been directed against me on the part of some of the bee growing editors, and I gladly accept your suggestion to say a word in your columns and this letter you are at liberty to publish.

I notice particularly the editorial which is to appear in your next issue and of which you kindly send me the copy. It is very fair in spirit but I fear not quite ready to accept the statements of chemists regarding adulteration of honey. You refer, as others have done, to the adulterated honeys bearing the label of C. F. Muth & Son as instances of the liability of chemists to go astray. Now there is no doubt whatever of the fact that these honeys were adulterated very largely with glucose, some of them containing over fifty per cent. Mr. Muth has evidently purchased honeys of this character and attached his own label to them. I have not for a moment considered that Mr. Muth did the mixing himself. I understand that he is a gentleman of the highest integrity and would under no circumstances consent to such a practice. Mr. Muth, however, should assure himself, by careful chemical analysis, that the honeys he purchases are pure or else he will be liable to make the mistake of attaching his label to the false article. I question whether it would be good policy in any man to attach labels of guaranteed purity unless he has something better than his own taste to guide him in the matter. Aside from this reflection on the ability of chemists to detect adulteration in honey there is nothing in your editorial to which I could possibly take exception.

I am now cooperating with Prof. Cook in the examination of a large number of samples of honey of known purity and there is no doubt but that these examinations will reveal a great variation in the composition of genuine honey. There is no variation however, in a genuine honey, which would make it similar to corn-starch glucose. It is admitted in Bulletin 13, Part 6, that the adulteration of honey with invert sugar is a difficult matter to detect, while there is no chemical process easier than the detection of honey adulterated with glucose. I make this state-

ment, of course, with the reservation that in such adulteration a considerable quantity of glucose is added, at least more than five per cent. It is apparent to every one that there would be no advantage to a dealer to take the trouble of mixing glucose with his honey if he only added five or ten per cent. The usual extent of the adulteration is from fifty to one-hundred per cent., that is to a honey composed exclusively of glucose. The examination of the honeys reported in Bulletin 13, Part 6, shows that out of five hundred samples, purchased in all parts of the United States, over forty per cent. were adulterated with glucose. Of the remaining samples there is a strong presumption that some were adulterated with invert sugar but they were passed as pure on account of the imperfections in the chemical methods for detecting adulteration of this kind.

Hoping that all who are interested in pure honey can work together in the labor of stopping adulteration, I am,

Respectfully,
H. W. WILEY
Chemist.

Eleven years ago Prof. Wiley was thoroughly convinced that artificial comb honey was being put on the market. He now well-knows that he was in error, but as thoroughly believes that nearly one-half of the *extracted* honey on the market is adulterated, or to be more exact, he believes that nearly one-half of the samples that have lately been analyzed, are impure, but the near future may decide that he is again mistaken. Of course, it is understood that he reached the latter conclusion upon different evidence than that upon which the former was drawn. It must also be remembered that Prof. Wiley is not alone in his conclusion as to the impurity of the samples analyzed. Other chemists have done much of the work. The point is right here: are the component parts and proportion of parts of honey as laid down in chemical works, correct?

There is no doubt that the severe criticism that Prof. Wiley has received has been hard to bear, but not more so, perhaps, than his tardy and reluctant admission of error. That assertion in regard to artificial comb honey damaged the bee keeping industry, and Bulletin 13, part 6, will follow in its wake. Considering this, it is not surprising that bee keepers have a "prejudice" against Prof. Wiley. I sincerely hope that Prof's. Wiley and Cook and everyone else who can throw light on this vexed question, will attend the next meeting of the North American; and let prejudice and personal likes and dislikes be laid aside for a desire to accept the *truth*.

EXTRACTED.

Manipulation Must be Lessened.

Father Langstroth is again having a spell of freedom from his brain trouble, and he has made a visit to Medina, Ohio. From an account of this visit, appearing in *Gleanings*, I make the following extract.

"It was interesting to see how he enjoyed talking about bees and the later improvements. In fact, he was more enthusiastic than many of the younger bee-keepers. In spite of the fact that age is usually conservative, Mr. Langstroth seemed to be thoroughly alive to the value and importance of the *later* improvements. To illustrate, said he, with his old time fervor, 'If money is to come from *honey*, manipulation must be reduced to a minimum.' He endorsed the idea of handling hives more and frames less; of using out-apriary hives; hives with self-spacing frames; hives that can be manipulated on the plan hinted at in the quotation. He still thought the new, Heddon hive best for the expert and advanced bee-keeper; but he did not believe it would ever come into general use with beginners and those farmers who keep only a few bees. For the mass of bee-keepers, the self-spacing Langstroth frame and system would be used."

How to Make Swarms Cluster in one or Two Places.

And still we progress. Instead of having swarms cluster here and there and everywhere they may be induced to cluster in the *exact* spot desired. O. R. Coe tells, in *Gleanings*, how this may be accomplished, and I never copied an article with more pleasure. He says:—

"In the matter of hiving swarms I can now swing my hat and cry 'Eureka!' I have no further use for hiving-box and enameled-cloth apron that have served me so well in the past. This is how I do it now: I have several boxes made as Doolittle recommends in making nucleus colonies in which he confines the bees. Mine are made about six inches square, and 13 inches long. Two sides are made of wire cloth, one which I can remove at pleasure. I have a $3\frac{1}{2}$ -inch hole on top of the box, in which the funnel fits, and through which I shake the bees into the box. Doolittle recommends taking combs with bees on, and placing them outside the hive to let the bees fill themselves with honey; but I have found a better way. On the inside of the board that forms the bottom of the box I nail four strips $3\frac{1}{2}$ inch square, so as to make a little trough 3 inches square and $3\frac{1}{4}$ inch deep; and over this trough, in the top of the box, I make an

inch hole, and nail wire cloth over it on the inside. Now, when the bees are in the boxes I can fill them with honey by pouring honey through the inch hole, so that it will fill the trough, and in that way fill all of the bees with honey, by using a dozen boxes, quicker than the bees will fill themselves from the comb: at least, my part is done quicker, and the bees can fill themselves at their leisure. This matter of having the bees filled with honey in some way is important, as I have had more than half of the confined bees die in less than ten hours, in a cage into which the bees had been shaken from the combs without letting them fill their honey sacs, or feeding them.

Every morning, about 7:30, I shake bees into two boxes (taking them from upper stories over queen excluders), pour in a little honey, and hang them from tripods by a string. These I place on either side of my apiary, and the bees just *hove* to get out, which attracts swarms to them; and I get 14 or 15 swarms to cluster on them without touching them. For swarms that don't go to the place where the confined bees hang, I take one of the cages of bees, slip a string over one tine of a potato hook, walk out with it to the place where the bees are flying thickest, and in a few minutes they will begin to cluster on the cage. Then I walk back and lead the bees to the place where the tripod is, and let the whole swarm settle on it. I now prepare the hive for them by placing an empty story on the stand where I am to hive them. When the swarm is all settled on the cage, or box that has the confined bees in, I take hold of the string and carry the swarm to the place where I am to hive them. I now sprinkle the bees, and also the inside of the empty hive, with water that is one-fourth honey, using a brush-broom for the purpose. Then I shake the bees into the empty hive, and place the hive over them. I think I have hived swarms in this way in one minute, and not had over 50 bees fly. This preventing bees flying and making a great commotion that is likely to call any swarm just issuing I successfully accomplish by this method; and I tell you there is some poetry in seeing swarm after swarm come out and begin to cluster on the cage before they are all out of the parent hive, while I, with a pail of sweetened water and brush-broom, keep back all other swarms, if any are likely to issue, until they are settled on the cage, and then have nothing to do but take hold of the string that suspends the cage, carry them to an empty story, shake them into it, and place their hive over them; then I return the cage to its place, ready for another swarm."

Advantages of Allowing Bees to Build Their own Combs.

Dr. C. C. Miller has condensed a ten-page report into one column, and it is published in *Gleanings*. The report is an account of an experiment in France to determine whether it is profitable to use foundation. It is

really an important subject, and I take pleasure in copying the article.

"De Layens, a prominent French bee-keeper, gives in *L'Apiculteur* a detailed account, occupying ten pages, of experiments with 18 colonies, allowing half of them to build combs, and supplying the other half with combs ready built. Each half of the 18 colonies were, as nearly as possible, of the same strength, with the same amount of brood and honey. M. de Layens says the object was not to find how many pounds of honey were consumed to make one pound of wax. Previous experiments had satisfied him that 6.3 pounds of honey were necessary.

Right here he gives a blow to the long-established method of reasoning on this matter. The orthodox thing has been to say, 'If 6 pounds of honey make one of wax, and that six pounds of honey will bring 40 cents at wholesale, while the pound of wax will bring only 30 cents, then it is a clear case that it is better to sell the honey and not allow the bees to build wax.' But M. de Layens says the question of how many pounds of honey make one of wax is not a question of importance at all. But he says, and says truly, the practical question is, whether the harvest of wax and honey produced by a colony is of more value than the harvest of honey from the same colony furnished with ready-built combs, and thus prevented from secreting wax.

The 9 colonies, furnished only with starters, produced almost exactly the same amount of honey as the other lot, and built 31 combs, thus making a clear gain of 31 combs over the colonies which had no combs to build.

One might readily conclude, that, if it is economy to allow the bees to secrete wax, it is useless, or worse than useless, to give them foundation. Not so, says M. de Layens. The gain in preventing drone comb is so much, in addition to having combs promptly ready for the grand harvest, that it is true economy to have all the frames which the bees are to fill with wax, completely filled with foundation. I suppose his plan would be to melt up constantly the poorest combs, to be replaced by those newly built.

Looking just alone at his experiments, it seems a pretty clear case that we are astray in not giving our bees a chance to build plenty of comb; but there remains something to be satisfactorily explained away. How does it come, if comb building has some effect upon the bees to make them harvest more (for it must be remembered that they harvest the honey that is used in building the combs), how does it come that a greater yield of extracted than comb can be obtained?

On the whole, I should not feel sorry if obliged to believe that M. de Layens is right in his views, for it would be a very nice thing to believe that we could readily change from one style of frame to another without any pecuniary loss; and that when, for any reason, a brood-comb did not exactly suit us, we could make money by melting it up.

But I can not say that I am willing to swallow his conclusions without making a wry face over them. His conclusions are, that, to obtain at the same time few swarms with a maximum of honey and new wax, a large horizontal hive is necessary, containing at the same time enough combs for the laying of the queen that she may not be hindered, enough combs to store all the honey harvested and enough empty frames to permit the young bees to construct new combs at the time of their own preference for such work. Of course, these conclusions may be all right for extracted honey, but how about comb honey?

His plan of having the new combs built is in his large hive of twenty frames, the brood nest being at one end, then empty combs, then combs of honey alternating with the empty frames or frames of foundation."

As most of my readers know, I have, for several years, hived my swarms in empty brood chambers (empty except starters) and obtained *more honey* as the result. It must be remembered that I gave plenty of foundation in the supers. The only objection to this plan is that the combs are not always perfect. It is possible that this plan may be advisable even if it is necessary to sort the combs and melt the imperfect ones. I think the reason why more extracted than comb honey is usually secured is because the nectar can often be gathered more rapidly than comb can be built to store it. If the yield were so slow that there would be time to build comb in which to store the honey, it is possible that no more honey would be secured by using comb or foundation. In the bountiful yields that sometimes come, there would be a great loss if the bees were compelled to build comb in which to store the honey. In the article given by the Dr., it does not appear whether the yield in the experiment given was meager or bountiful.

How to get the Most Benefit from Shavings as Smoker fuel.

I wrote to Mr. Heddon for his views upon the Smoker question, and he replied that the best that he could give was what appears upon this subject in his book, "Success in Bee Culture." He wrote it seven years ago, yet he says that he has since seen no cause for changing his mind. As he goes more into the details of management than I did in my leader, I think best to copy a part of what he says. The *first* paragraph was written by the person that Mr. Heddon calls "My Friend."

"For the past five seasons we have used pine shavings for fuel, with almost perfect satisfaction. The only difficulty we experi-

enced in their use, was in getting them to burn when the fire is first started in the morning, but now obviate this by first using a small quantity of punk or rotten wood (elm preferred), and when this is thoroughly lighted, fill up the smoker with shavings. Fine shavings, such as can be procured at a planing mill, answer every purpose if covered with a small quantity of a coarser article, like bench shavings of carpenter shops. These last, we thoroughly dampen before using, especially if the smoker is to be run to its full capacity, as they fully prevent the issue of sparks and render the fuel more lasting and serviceable. After the fire is once thoroughly started, the shavings should be closely packed, using care not to destroy the draft or impede the free issue of smoke. A little practice will soon make you proficient in the use of this fuel, and when once used, I feel sure, will please you. Being easily obtained, lasting well when properly packed (we often use one of Bingham's 'Doctor' smokers three hours, without refilling) and producing a dense volume of cool smoke that will make even the fiercest hybrids instantly quail. Pine shavings, in my opinion, just 'take the cake' as a smoker fuel.

In addition to what has been said I wish to add my evidence to the great superiority of the shaving smoke. I would not for fifty dollars be willing to exchange these shavings for any other material, with which I am acquainted, to use in our bee-smokers. With them very little heat is evolved: fully as little creosote. They settle the 'cold blast' problem. Their smoke, while it most completely conquers the bees, leaves no reactionary belligerent effects with them, as does tobacco, rags and some other material. The smoke is not disagreeable to the operator. No sparks fly out while using the smoke. They last a long time, when loaded into the smoker just right, a little closer detail of which I re-present. Pine shavings, are preferable. As in most places, one can get 'planer' shavings much handier than bench or hand-planed shavings, I will tell you how we have made them work equally well: First, press down to the bottom of the smoker, a thin (one-half inch) layer of hand-planed shavings, quite snugly packed. Next light some of the punk, 'My Friend' speaks of, (this punk should be very light and readily combustible: only fit to start fire with) and drop it down upon the thin bed of shavings, give it a few puffs from the bellows, to get it well lighted, then fill up to near the top of the fire barrel with the pine planer shavings: pack these down moderately tight, puffing with the bellows as you pack. Now take up a small handful of the bench shavings (any wood will do for these) and douse them with water, squeeze them as dry as you can, so they will not drip, then press them into a layer about an inch deep: that will fill the fire barrel to the top. Now adjust the nozzle and puff away until the white smoke rolls forth in a volume that will subdue the worse tempered bees, whether lying outside their hive, on their combs, or hanging in a cluster upon some tree, waiting to be hived. When you notice the first spark coming from the nozzle, your smoker needs re-filling. Re-

move the nozzle, push these shavings (which will not be burned) to the bottom to form the bottom layer, fill with the planer shavings and cover with the dampened hand shavings as before, and you are again ready for another hour's constant use. During that time of year when no excessive or constant volume of smoke is used, one filling often lasts us five hours. No material will better hold fire than these shavings, when properly adjusted. Robber bees learn to beware of the volume of smoke that a few puffs bring forth."

ADVERTISEMENTS

PATENT WIRED, COMB FOUNDATION HAS NO SAG IN BROOD FRAMES.

THIN, FLAT BOTTOM FOUNDATION HAS NO FISH BONE IN SURPLUS HONEY.



Being the cleanest is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),
3-90-tf Sprout Brook, Mont. Co., N.Y.

THE CANADIAN

Bee Journal,

EDITED BY D. A. JONES.

Poultry Journal,

ED'D BY JNO. GRAY.

\$1.00 a Year.

\$1.00 a Year.

These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike valuable to expert or novice. Both illustrated and improved. Under new management. Address BEETON, ONT., Canada.

ITALIAN QUEENS

Prices for June and after.

AND BEES	
One untested queen, .....	.75
Three " queens,	2.00
One tested queen,	1.50
Three " queens,	4.00
Very best, select, tested queen,	3.00
Two - frame nucleus, with any queen,	\$1.50 extra.
Safe arrival guaranteed.	

W. J. ELLISON,
3-91-tf Catchall, S. C.

Elmer Hutchinson,

Vassar, Tuscola Co., Mich., can furnish untested, 5-banded, Italian queens at \$1.00 each; 6 for \$5.00. Tested queen, \$1.50. Breeding queen, \$4.00. 6-92-tf

Second Hand

Supplies.

O F the second

hand supplies that I have been advertising in the REVIEW, the following remain unsold:—



100 old-style, Heddon surplus cases at 20 cts. (as a non-separated case, they have no superior); 25 slatted honey boards at 10 cts.; 40 "dummies" for contracting the brood nest, 3 cts.; 20 Heddon feeders at 40 cts.; 25 Alley queen and drone traps at 25 cts. All these are practically as good as new.

I also have 2,000 new, four - piece, white poplar sections at \$4.00, and 200 white poplar, 12-lb shipping cases in the flat at 10 cts. They were made by Dr. Tinker, and cost me 11 cts. each, besides the freight. They are neat, and particularly adapted to exhibiting honey at fairs.

I would sell any of these articles for cash, or I would exchange them for extracted honey.

W. Z. HUTCHINSON, Flint, Michigan.

EARLY CARNIOLAN QUEENS.

From May 20th to June 20th, \$1.50 each. After the 1st of June there will be two breeding yards, one for Carniolans and one for Italians, and queens of either variety will be sold as follows: Untested queens, 75 cts. each; three for \$2.00; six for \$3.00. After June 20th, tested queens of either variety, \$1.00 each. For further particulars send for circular. 1-92-tf

JNO. ANDREWS, Patten's Mills, N. Y.

If you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No 10 Spruce St., N. Y.

Golden, Honey Queens.

Queens in June, untested, \$1.00; six for \$5.00. Tested, \$1.75. Select tested, \$2.50; extra select, \$4.50; the very best, \$5.00. Imported, \$6.00.

LEININGER BROS.,
12-91-tf Ft. Jennings, Ohio.



SOLID GOLD

The past 17 years of careful breeding have wrought great changes in the Italian bees as regards their color and honey gathering qualities. I am now rearing queens, in accord with Nature's best way, that are yellow almost to the tip, and have a record of 3.9 pounds of comb honey from a single colony one season.

After June 10 I can furnish untested queens at 65 cts.; tested at \$1.50; select, breeding queen, \$4.00. Send for free sample of bees and be convinced. Make money orders payable at Lafayette, Ind. Address W. V. MOREHOUSE, Octagon, Ind. 2-92-12

50

Cents will buy a good, two-story, L-hive. Shall we send you one? Send a statement of what you want and we will give you prices. Send for price list. WM. BRIGGS, Mazeppa, Minnesota. 1-92-12

ON HAND NOW.
THE MOST COMPLETE STOCK
OF BEE HIVES AND SUPPLIES
IN THE NORTHWEST.

W. H. PUTNAM,
RIVER FALLS, WIS.

Bees, Hives, Sections, Smokers, Foundation, Extractors, Shipping Cases, Etc., are sold by J. C. SAYLES, Hartford, Wis.
Send for Price List. 2-92-tf

Cheap Freight and Quick Transportation.

Being located at the most central point of railroad and express companies enables us to furnish bee keepers with supplies at less cost to themselves than any house in the country. We furnish everything needed in the apiary, as low as the lowest and as good as the best.

COOK'S COMPLETE HIVE combines all the most approved methods of hive making. It is a complete arrangement for out-door wintering and is equally well adapted to producing comb or extracted honey. Send for circular. Fine lot of **Bees for Sale** cheap.

J. H. M. COOK, SUCCESSOR TO KING & ASPINWALL 78 Barclay St., New York City.

If You Wish Neat, Artistic

PRINTING,

Have it Done at the Review.

GOLDEN

HONEY QUEENS

Bred from best honey gatherers in America. Beautiful, gentle, prolific and hardy.

TRY ONE.

Warranted \$1.00 each; six for \$5.00. Select tested and breeding queens after July 1st. Safe arrival and satisfaction guaranteed. Prompt shipments. Circular free.

SPECIAL.

For \$1.15 will send one warranted queen and Progressive Bee-Keeper one year to introduce 6-92-tf E. F. QUIGLEY, Unionville, Mo.

Please mention the Review.

Golden Italians,

Five and three banded queens, warranted purely mated, at the following prices:

In June, 50 cts each, or six for \$4.50. July and after, 75 cts each or six for \$4.00. Tested queens in June, \$1.50, or three for \$4.00. July and after, \$1.25 or three for \$3.50. Select, tested queens from \$2.00 to \$5.00 each. 4-92-tf

A. SIDLER, Thayer, Mo.

Please mention the Review.

Foundation Reduced Three Cts. a Pound. \$3.00 Sections Only \$2.60. Bingham Smokers at Cost. Free Price List of Everything Needed in the Apiary. M. H. HUNT, Bell Branch, Mich.

Please mention the Review.

Barnes' Foot and Hand Power Machinery.



This cut represents our Combined Circular and Scroll Saw, which is the best machine made for Bee Keepers' use in the construction of their hives, sections, boxes, etc.

8-91-16t

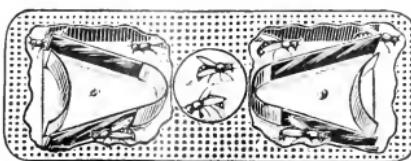
MACHINES SENT ON TRIAL.

FOR CATALOGUE, PRICES, ETC.,

Address W. F. & JNO. BARNES CO., 384 Ruby St., Rockford, Ills.

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HASTINGS, "Lightning" BEE ESCAPE.



Send for a sample of Hastings, "lightning" Bee Escape and you will be convinced that it is the best and most practical escape yet produced. It will clear the supers in a short space of time—from 2 to 4 hours—and it is impossible for it to become clogged, as the bees cannot return. Each escape is accompanied by directions and guaranteed to do as represented. 20cts, each by mail: per doz 2.25. Electros. furnished free to dealers for use in their catalogues. Write for discounts

M. E. HASTINGS,

New York Mills, N. Y.

The Terrors of Swarming Time Changed to



pleasant pastime by the use of B. Taylor's Handy Swarm Catcher. Patent allowed April 2, 1892. 1000 taken by one party on May 19. One order shipped to Scotland May 23. Sure to come into general use. Price \$1.00 each, mailed and painted. Six, in the flat, \$15. Our catalogue tells all about it. Write for it. We make the best bee hive on earth. WESTERN M'FG CO.,

Spring Valley, Minn.

Bee Hives, Sections, Etc.

We make the best goods and sell them cheap.

Our sections are far the best in the market.

Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

G. B. LEWIS CO.,

Watertown, Wisconsin.

500 Colonies of Bees

Write for prices on large quantities.

2,000,000 Snow-White Sections.

Write for Prices on Large Quantities.

Send for our 24-page Catalogue of Dovetailed Hives, Smokers, Extractors, etc.

Mention Review.

LEAHY M'F'G CO., Higginsville, Mo.

J. FORNCROOK & CO.



WILL FURNISH YOU THE

"BOSS" ONE-PIECE SECTION

AS CHEAP AS THE CHEAPEST

And the **BEST** in the Market.

Also **DOVETAILED HIVES**
and other **SUPPLIES.**

Write for Price List.

WATERTOWN, Wis., Jan. 1, 1892. 12-91-12

J. W. Taylor's strain of Italians

Beats the World

to gather honey. 224 pounds from one hive. Untested queens 25 cts. each; six for \$1.00; twelve for \$7.00. Tested, \$1.25; six for \$7.00. Satisfaction and safe arrival by mail guaranteed.

4-92-6t

J. W. TAYLOR, Ozan, Ark.

Please mention the Review.

DON'T SEND

Across several States after Goods that can be bought just as cheaply near home, but write to

GREGORY BRO'S & SON,

Ottumwa, Iowa, for their large, 12-page, illustrated catalogue of everything needed in the apiary. Hives, Sections, Shipping Cases, Smokers, Foundation, Bees, Queens, Bee Veils, etc., etc., etc.

Please mention the Review.

For \$1.50 I will send the Review for 1892 and a fine, young, laying, Italian queen.

Queen alone, 25 cts. For \$1.75 I will send the Review, the queen and "Advanced Bee Culture." Tested queens, \$1.00. The Review and a tested queen \$1.75. A discount on large orders. W. Z. Hutchinson, Flint, Mich.

REVIEW

Good Queens Cheap.

300 tested Italian queens, raised last season, for sale at \$1.00 each; \$10 per doz. A few hybrids at 25 cts. They will be sent about June 15th to 25th, or later if desired. Have orders booked now and send money when you want them. My bees have been

Bred for Business

and these are a bargain. Nuclei and full colonies at very low prices.

J. A. GREEN,

2-92-ef Dayton, III.

Please mention the Review.

NEW YORK CITY

Is the best located point in the East for the shipment of goods. As we sell as low as **ANY ONE**, you should have our circular. **ESPECIALLY** low prices on Italian bees and queens. 1. J. STRINGHAM, 12-91-12? 92 Barclay St., New York City.

Only \$5.00 will buy

One good, Si simplicity, ten-frame hive with a good colony of Italian bees and a queen. \$4.00 will buy an eight frame hive, bees and queen. L and Hoff. frames. Queens and nuclei in season. JNO. A. THORNTON, Lima, Ill. 5-62-6t

Please mention the Review.

QUEENS

1892.

Don't you want large, beautiful Queens producing Bees that will just please you fully? Well, my Italians are in the lead so my customers say. 1,048 queens sold and have heard of only two misnamed. Orders booked now and will be filled in rotation 10 per cent off on all cash orders received during January. Warranted Queen \$1.00; 6 for \$1.50. A select Breeding Queen, yellow to the tip, \$2.00. Will begin shipping May 1st. 1.92-4f

W. H. LAWS, Lavaca, Ark.

SIX MONTHS

for only 15 cents.

White Mountain Apiarist.

This offer seems to have hit the right chord. Everybody wants to see what the APIARIST is like. Try it. WHITE MOUNTAIN APIARIST, Groveton, N. H.

BEE SUPPLIES RETAIL
AND WHOLESALE

Everything used in the Apairy
Greatest variety and largest stock in the
West. New catalog, 60 pages, free to bee-keepers.

Special Discount to Dealers.

1.92-tf E. KRETCHMER, Red Oak, Iowa.

Please mention the Review

SECTIONS, SECTIONS, SECTIONS,

Foundation	Fondation,	Foundation,
SMOKERS,	SMOKERS,	SMOKERS,

and ALL other supplies. Send for catalogue.

J. STAUFFER & SONS, Nappanee, Ind.

12-91-9t Please mention the Review

The queen I got of you has more brood than any other colony I have. A Miller, Trail, Ohio.

Our 5-Banded Italians

Are the bees for business, as well as being gentle and beautiful. One warranted queen, \$1.00; six for \$5.00. Safe arrival and entire satisfaction guaranteed.

Free—THE AMATEUR BEE-KEEPER, 52 pages, price 25 c. A copy free to the one sending the most money for queens each day.

S. F. & I. TREGO,
1.92-6t Swedona, Illinois.

Please mention the Review



YOU'LL find our strain of **Golden** and **Leather** colored Italian bees. Queens bred for business. **Tested**, in May, \$1.50; 3 for \$4. **Untested**, \$1.3; 3 for \$2.50. Nuclei and full colonies at special prices. Bee-Supplies of all kinds. Send for Circular giving full particulars.

JNO. NEBEL & SON,
High Hill, Mo.

3.92-1f

Bingham's Perfect Safety
SMOKER.

Pat. 1878; Re-issued 1882. Pat. 1892

No more sooted sections, burned tingers, or burned Apiary. Any large advertiser of Bingham Smokers will send you a Perfect Doctor, Perfect Conqueror, or Perfect Large Smoker, if you will send to him 25 cts. more than the regular mail price, and ask for either of the three sizes mentioned.

Bingham & Hetherington, Abronia, Mich.

If you are going to—

BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

White Poplar Sections.

We have New Steam Power, and New Buildings, and are now ready to furnish White Poplar Sections, Clamps, Crates and Wood Sides at short notice. Workmanship, Quality and Price unsurpassed. Send for sample and price list.

PRIME & GOVE,

1.90-tf Bristol, Vermont.

350 Colonies; 1,000,000 Sections; Hives, Smokers, Queens, Etc. Send for price list to E. T. FLANAGAN, Belleville, Ill. 12-91-6t

BEE SWAX,

Imported or Domestic, Crude or Refined. A Stock Constantly on Hand. Write us for Prices, Stating Quantity Wanted. 4.92-4t

ECKERMAN & WILL, Syracuse, N. Y.

Cheap,



CHEAP,



Cheap.

Five-banded, gilded Italian queens. One untested queen in August or September, 75 cts. One-half doz., \$4.00. Order now.

J. F. MICHAEL,
German, Darke Co., Ohio.

12-91-8t

BUY CHEAPLY, BUT BUY WELL.

It pays to buy reliable goods. Poor goods are dear at any price. We sell **CHEAPLY** and our **Bee Hives, Sections and all Supplies** are **FIRST CLASS**.

Catalogue, price list and sample copy of the

American Bee-Keeper

sent free. Address

THE W. T. FALCONER Mfg. CO.,
Jamestown, N. Y.

Please mention the Review.

A Good Type Writer CHEAP.

For the past three months I have been using an Odell type writer. It is the best, low priced machine with which I am acquainted. Its work is the equal of that done by any type writer. I doubt if so great speed can be attained as is the case with the keyed machines, but I can write more rapidly and easily than I can with a pen, and I presume that those receiving my letters can read them with greater ease and certainty. The machine is simple, easy to learn and not likely to get out of order. There are two styles, one costing \$15.00 and the other \$20.00. The Odell Co. has asked me to take the agency for the sale of the machines, and I shall be glad to send specimens of writing and illustrated descriptive circular to any one thinking of buying a type writer. W. Z. HUTCHINSON, Flint, Mich.

GOLDEN ITALIAN QUEENS.

My apiary is located on the broad prairie, 3 miles from other bees; hence, not one queen in 100 will be misnamed. Warranted, in May 75 cts. each; two for \$1.25. Tested, \$1.00; two for \$1.75. After June 1st, warranted queens 65 cts. each, or two for \$1.00.

C. B. BANKSTON & CO.,
5292-4 Thorndale, Texas.

The Lone Star Apiary Sends



QUEENS

As cheaply as anybody. Untested queens, after June 1st, 75 cts. Six for \$1.20. Tested queens, after June 1st, \$1.00; six for \$5.00. Nuclei, 75 cts. per frame, Langstroth size. Price list free on application. Correspondence solicited. Discounts given on large orders; write for special prices. Remit by Pacific Express money order, P. O. money order, or postal note. Satisfaction and safe arrival of queens guaranteed.

OTTO J. E. URBAN,

3392-4 Thorndale, Texas.

The Golden, Yellow, Italian

1852.

REDUCTION ON THE PRICE OF

1891.

Langstroth on the Honey Bee.

(REVISED.)

PRICE BY MAIL, \$1.40; BY EXPRESS OR FREIGHT WITH OTHER GOODS \$1.25.

By its copious indexes, by its arrangement in numbered paragraphs, including reference numbers on any question in bee culture, any information can be instantly found. This book is the most complete treatise on bee keeping yet published. A FRENCH EDITION JUST ISSUED.

1876. DADANT'S COMB FOUNDATION. 1891.

More than Ever. Better than Ever. Wholesale and Retail.

Half a Million lbs. Sold in 13 Years.

Over \$200,000 in Value.

It is THE BEST, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year. Samples, Catalogue, free to all. Send your address.

We also make a specialty of Cotton and Silk Tulle of very best grade for bee-veils. We supply A. I. Root and others. 7,000 Yards just received. Prices Very Low. Samples Free.

Smokers, Honey Sections, Extractors, Tin Pails for Honey, Etc. Instructions to Beginner with Circulars Free.

4-92-12

Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

AUG. 10, 1892.



THE BEE-KEEPERS'
REVIEW
Published Monthly.

At Flint, Michigan.—One Dollar a Year.

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All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:—

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

CLUBBING LIST.

I will send the REVIEW with—

Gleanings.....	(\$1.00)	\$1.75.
American Bee Journal.	(1.00)	1.75.
Canadian Bee Journal	(.75)	1.05.
American Bee Keeper	(.50)	1.40.
Missouri Bee Keeper	(.50)	1.40.
Bee Keepers' Guide	(.50)	1.40.
Apiculturist,	(.75)	1.05.
Bee-Keepers' Magazine.	(.50)	1.40.

For Simplicity and Durability

Bingham Patent Smokers,

AND

BINGHAM & HETHERINGTON

Honey Knives,

ARE WITHOUT QUESTION

THE BEST ON EARTH!

Doctor Smoker,	3½ inch,	2.00
Conqueror Smoker,	3 "	1.75
Large Smoker,	2½ "	1.50
Extra Smoker,	2 "	1.25
Plain Smoker,	2 "	1.00
Little Wonder Smoker, 1½ "	65	
Bingham & Hetherington Knife,	15	

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINCHAM & HETHERINGTON,

Abronia, Michigan

1-90-1f.

Please mention the Review.



Western BEE-KEEPERS' Supply Factory.

Largest Business of the kind in the West.



We manufacture Bee Keepers' supplies of all kinds, *best quality at lowest prices*. Dove-tailed Boxes, Foundation, Extractors, Smokers, Crates, Veils, Feeders, Clover Seeds, Buckwheat, etc. Imported Italian Queens, Queens and Bees. Sample Copy of our Bee Journal, "The Western Bee-keeper," and latest Catalogue mailed Free to Bee-keepers. Address JOSEPH NYSEWANDER, DES MOINES, IOWA.

4-92-tf Please mention the Review.

We're not Satisfied until every bee keeper in the land sees a copy of the

Progressive • • •

• • • Bee-keeper

It is a 16-page monthly at 50 cts. a year. Sample copy free. If you like beautiful business bees, try

Quigley's Golden Queens.

To introduce the Progressive Bee-keeper, I will send it one year and a beautiful queen for \$1.15. Regular price of queens, \$1.00; or six for \$5.00. Warranted purely mated and safe arrival and satisfaction guaranteed.

PROGRESSIVE BEE-KEEPER,
Unionville, Mo.

Bee Hives and Section Boxes.

Simplicity, Langstroth-Simplicity, Standard Langstroth, Dovetailed and Champion Chaff Hives, Supers, One Piece Sections and Shipping Cases. Foundation, Smokers, etc., etc. Send for 16 page Circular.

1-92-tf PAGE & KEITH, New London, Wis.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

QUEEN CAGES

Are my specialty. I make the Benton cage in many styles and sizes. A light cage saves postage; a neat cage creates a favorable impression; one properly arranged carries its occupants safely in either hot or cool weather; and my special machinery and large trade enable me to furnish extra nice cages, having all these advantages, at a very low price. Sample cages and prices on application.

C. W. COSTELLOW, Waterboro, Me.

IF YOU WISH TO KNOW

How to get the honey off the hives with the least labor and annoyance, how to store it and care for it, how to prepare it for market, what kind of packages to use and how to send them to market in such a manner that they will not even be *soiled*, much less the contents injured, buy the book "ADVANCED BEE-CULTURE" and read the chapter entitled "From the Hive to the Honey Market." Remember, too, that this is only one chapter of thirty - two.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price \$1.00. Mailed, postpaid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address ROWELL'S ADVERTISING BUREAU, 10 Spruce St., N. Y.

On Their Own Merits!

Those who have had queens from me say my

5-Banded Golden Italians

Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. **None but the very best Queens sent out;** large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00, 6 for \$5.00. Special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.

CHAS. D. DUVAL,

Spencerville, Mont. Co., Md. 12-91-ff

Please mention the Review.

ITALIAN QUEENS AND SUPPLIES FOR 1892.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-tf.

Augusta, Georgia.

DR. J. W. GRENSHAW, Versailles, Ky.,

OFFERS for sale untested QUEENS in June at \$1.00 each. After June at 75 cts. Imported or American mothers. Contracts solicited. Also Celery Plants July to Sept., at \$2.00 per 1000. Also any of Root's goods. 6-92-4t *Please mention the Review.*

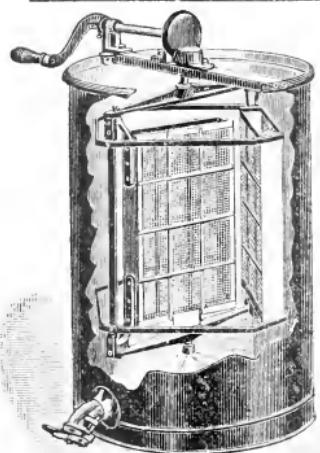
GOLDEN ITALIAN QUEENS.

My apiary is located on the broad prairie, 3 miles from other bees; hence, not one queen in 100 will be mated. Warranted, in May 75 cts. each; two for \$1.25. Tested, \$1.00; two for \$1.75. After June 1st, warranted queens 65 cts. each, or two for \$1.00.

C. B. BANKSTON & CO.,

5-92-ff

Thorndale, Texas.

A Grand Success.

Mention Review.

**New Cowan Reversible
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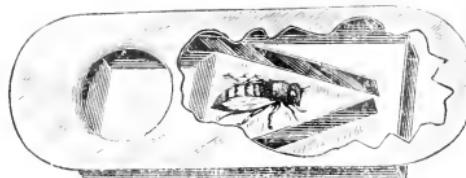
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W. Z. HUTCHINSON, Editor & Prop.

VOL. V. FLINT, MICHIGAN, AUG. 10, 1892. NO. 8.

**The special topic of this issue is
Smoke and Smokers.**

**That of the next issue will be
Feeding and Feeders.**

**Valuable Inventions Ought to be Patented
And the Patents Respected.—Adaptability
of Hard Wood Fuel for use in
The Bingham Smoker.**

T. F. BINGHAM.



trust that you and your readers will excuse me.

One thing I notice—and I do not say that it encourages or discourages invention—much clamor has been raised in bee papers by different parties who think a *benefited* people ought to remember their benefactors. Mr. Langstroth does not have to claim that he invented the movable frame, the

shallow chamber or the bee space; yet many hives are now sold that have nothing to recommend them except what Mr. Langstroth invented, and the innocent purchaser knows only the name of the vendor.

Bingham, and Bingham & Hetherington, from down in the '60's until now, realizing the value of legal record for the preservation of their bright ideas when embodied in practical benefits, have, to avoid even the question of invention, availed themselves of American citizen's rights in the U. S. patent office.

I have never quite liked the fact that Mr. Cory, the inventor of the cold blast smoker, should have lost the credit of his invention. It would have been better for him, also for bee-keepers, if he had ran it through the patent office.

I had similar feelings when parties in Canada and England made Bingham & Hetherington honey knives and smokers and called them by their own names—carrying the false impression that they were the inventors as well as the makers. In our own country false claims frequently get a free advertisement and bee-keepers are taken in. Note the case of poor Mr. Crane who bought a "basket full," etc.

Mr. Root carefully analyzed the principles upon which smokers depend, and those who read his article will find that he understood the subject under discussion.

His remark that the cut-off weakens the blast in our smoker reminds me of the first question Mr. Heddon asked upon being

shown a divided-blast smoker. "Bingham," said he, "why didn't you run that blast-tube into the stove?" I told him that the cut-off was Bingham's invention and it enabled the smoker to respond to the slightest movement of the bellows and to burn any kind of fuel without blazing, and that it had blast enough for all practical purposes.

It is here that long, straight, perfectly dry, coal producing wood demonstrates the principle. The interstices between long, straight sticks set up in the stove and nozzle afford numerous and unobstructed chimneys for the natural draft and the blast of the bellows. No one can fail to realize that with such fuel the most delicate manipulation of the bellows delivers a gentle, continuous stream of hot, strong smoke—without creosote—soothing and effective. With smokers that can make smoke out of everything, the fuel problem is settled by the ease by which it can be obtained.

ABRONIA, Mich.

July 25, 1892.



Why Hard Wood Fuel is best—A Proper Arrangement of Parts Banishes Screens and Valves.

A. G. HILL.



HIS subject of "Smoke and Smokers" is of no small importance. Everyone who opens a hive of bees, or does any manipulating with them at all, must use smoke. It is possible to do without a veil to protect the face, but we know of no one who can handle bees without smoke; and so when we think of the large number of bee-keepers, the smoker and fuel loom up in importance.

So little fuel is needed that it seems nonsense to use any but the best. Hard wood, beech and maple chips, or small blocks, fine chips gathered from the wood yard, and beech and maple bark do very well. Such fuel makes less creosote to adhere to the top of the smoker than soft or rotten wood, or shavings. A smoker, to burn hard wood, does not need to be large (perhaps one-half the size of a smoker for soft fuel) to furnish

all the fire for smoke that would ever be necessary.

Straw burning thresher engines are quite a success out on the western prairies where there is no wood, but in a wood or coal country they would be entirely out of place and market. The large clumsy fire box and the labor of feeding to keep up steam would preclude their use in a country supplied with more solid and natural heating material. The same would be true in regard to smokers. We would hardly expect a smoker adapted to the use of rotten wood or shavings to stand preferred and out-sell one that would make a more lasting fire and be less troublesome in burning clean and more durable fuel.

The use of things determines their usefulness and inconveniences or faults, and it is only when a utensil, appliance, or a machine is put to practical business that its nice adaptation or fitness to its purpose are apparent; or that a ready and keen mechanical sense, through some necessary bungling movements of the hand, or unexpected hindrance to quickly accomplish, discovers the defects and discrepancies in details and particulars. This bungling and clumsiness in working we all have to endure more or less and it is as often inherent in the means of doing things as in ourselves. We are all susceptible to harmony and unity of action and especially do we need it in the machinery that accomplishes our work. It is progress and the world demands it.

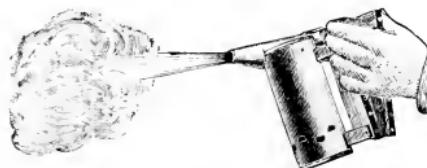
Using the different smokers in the market, each gave evidence of faults which, in the aggregate, were many, viz., difficult to start fire in; not convenient to take hold of; awkward position or hard to hold and work; doesn't hold fire; not convenient to put in fresh fuel; ashes and sparks blow out with the smoke soiling the sections of honey; bellows draws in smoke etc., etc. Some bee-keepers think they prefer the thick, dense smoke from soft wood, but actual test proves that the clearer smoke from hard wood is just as effectual, besides having the advantage of cleanliness.

To overcome these difficulties I have experimented yearly for a number of years. Not getting satisfactory results, I gave up discouraged a number of times. Of course, pecuniary loss attended all such experiment and trial. After spending hours, and days, and months in thinking and dreaming of smokers, the idea finally came to me to re-

verse the bellows, making a smoker convenient to take hold of, blowing the blast straight across the top of the cylinder, using a flat, hinged lid with a nozzle attached. This arrangement seemed to clear away all difficulties heretofore encountered. Large draft holes punched through the sides make it convenient and easy to start the fire, while the grate can be without perforations, thus causing it to retain the ashes, and hold the fire longer when at rest. The draft is large and ample, the fuel burns readily, and the smoker really does more than others double its size.

It is sometimes amusing to hear the objections raised by those prejudiced. One says: "It gets too hot." I will admit that the smoker has great capacity—it has no equal in this respect when the bellows is worked steadily a few minutes—but, in actual practice, this is not necessary: two or three blasts from the bellows are sufficient to quiet any colony of bees.

The blast tube connects with the bellows close to the top, and the valve is so light and works so easily, hanging in a perpendicular position with the hinge at the top, that no smoke is drawn into the bellows; thus a difficulty is overcome simply by the position and arrangement of parts, instead of using valves, screens or other devices.



HILL'S COLD BLAST SMOKER.

The convenience of opening and getting at the blast tube, smoke funnel and lid, for cleaning off creosote, is a desirable feature. The lid is so light that it opens with a touch, and by pressing the bellows the leather springs up and closes the lid. There is no particular disadvantage if the lid of the smoker is not close-fitting: it is intended to open and shut easily. The upright position of the fire cylinder at all times, whether at rest or at work, and the top as the place for supplying fuel, prevents the escape of fire or ashes. The latter at the bottom of the upright cylinder, with the blast tube across the top and the fresh fuel between, conquers all the above named difficulties without the aid of screens and valves that soon clog with

creosote and become an annoyance. These advantages have been gained by the arrangement and position of parts adapted to the end in view.

This smoker has been on the market a little more than a year, and the only complaint against it is that it might sometimes leak fire. This defect has already been remedied by giving a crescent shape to the draft holes.

KENDALLVILLE, Ind.

July 5, 1892.



The Use and Abuse of Smoke in Handling Bees.—Some Excellent Hints.

C. W. DAYTON.*



IN the first place, why do we use smoke? If we open a hive quietly and blow in under the edge of the enameled cloth a blast of cold smoke down will go all of the bees pell-mell before it. But suppose, before we get the cover off, it slips from our

grasp and gives the hives one or two sharp knocks? This sets all the sentinels on the alert, and the moment the corner of the covering is raised the bees will come out from under it as if shot from a pop gun, and in less than a second will be seen with bowed backs pegging away at our trouser legs. An ordinary blast of smoke may confuse a few but the most of them will go straight through

* C. W. Dayton was born in Chemung Co., N. Y., in 1861. When ten years old he came with his parents to Iowa and lived on a farm, where he attended the district school and afterward Bradford Academy two years. After a thorough study of Quincy's *Mysteries of Bee-Keeping*, Cook's *Manual of the Apiary* and Root's *A B C*, he, at the age of 20, began the keeping of bees. Average number of colonies kept, about 85; largest number 190; smallest, 52. Largest honey crop, 9,000 pounds. His bee-keeping has been managed in conjunction with other avocations, principal among which may be mentioned that of printing, stereotyping and engraving, with no less enthusiasm than apiculture. Although the most study has been placed upon sketching and engraving, the typist's case lends no insignificant charm, and 7,397 ems of solid brevier (an ordinary ten-hour's work) in four hours and twenty minutes is his "best mark" at composition. After being constantly employed for six years as foreman of a combined newspaper and job printing office he is handling bees in Colorado as a rest from too constant office labor.

it, and the few will turn back only to return the more persistent in the fight. At such a time the smoke should be hot and dense enough to send them spinning to the ground or they will follow, as mad bees will, for hours. Cold blasts or small Bingham's are of little use in such emergencies. To clip queens in May when the apiary is quiet and the colonies not so strong and a little honey coming in, not more than one colony in ten needs to be smoked. Clouds, accidents, early and late handling also modify cases. A board cover cannot well be removed without some jarring.

In handling bees all day I find use for the greatest as well as the least amount of smoke. If there are a dozen angry bees following me about I want a smoker that will send a blaze out the nozzle to clip their wings for them. It is better than boards or shingles which it takes time to hunt up and the smashing of the bees leaves a scent which angers other bees. The next moment a very gentle colony may need to be examined.

A person who would direct such a volume of smoke as would follow this blaze of fire upon a gentle colony ought to be fined for cruelty to animals. In such a case the smoke should be blown by the side of the hive and the wind be allowed to waft it over the top of the frames, or if there is no wind the smoker must be held far enough away so that the smoke is diluted with the air before reaching the bees, and as the bees begin to retire between the top bars, we may set the smoker down and begin taking out the frames. By the time one or two frames have been examined the bees will begin to crawl up over the top bars again, and some may be seen to fit their wings sharply and a bee now and then will jump quickly at another. These movements are warnings for the manipulator to look a little out and the smoker should be brought up with the right hand and without moving any other part of the body, and another whiff wafted over the frames when the bees will settle back as at first. Just a little smoke on very slight occasions is the best use of it. When one or two bees on the top of the frames begin to get frisky and can't stand still: a quarter of a puff of dense smoke with the nozzle held close by sober them, when, if they are not looked to, in a few moments they would put the whole top of the hive in commotion, as other kindly disposed bees

catch the idea readily. If a comb is set out of the hive the bees on it will seldom fight unless aggravated by quick angular motions, which are decidedly improper in the bee yard, unless it be after dark.

All motions should be smooth, easy and not swift, but to work swiftly every move should be made to count.

The gait to acquire when working with bees comes by practice and it saves smoke as well as temper of both bees and keeper.

Practice also makes one expert in taking out frames, setting them down and doing other work with the least jars, all of which saves reaching for the smoker if not a fight. Some bee handlers open hives quickly, jerk the frames out spitefully, and to make up for their rashness send smoke in awfully that drives the bees down in utter confusion, often out at the entrance and they go flocking around the corner of the hive or under the alighting board.

This is a shocking procedure: it stops the progress of work inside the hive; destroys the courage and interest the bees have for their home, wastes honey consumed and honey that might be gathered from the flowers: it also makes angry bees which attack anything that comes near and often at a distance for days afterward; and bee keepers who do not pay attention to the gentleness of their bees out of respect for their neighbors ought to be refused admittance to the Bee-Keepers' Union: because it is no more reasonable to provoke bees to anger and let the neighbors look out for themselves than for a farmer to turn a mad bull loose into the highway.

When I began to open hives I thought the bees should all be smoked away from the entrance before taking the cover off. This was a mistake because if the hive is not jarred none of the entrance bees will bother: nor should the bees on the top of the frames be driven far down in the combs: only the threatening bees at guarded points need smoking and the colonies may be handled just as rapidly and the stream of flying bees to and from the entrance need not be interfered with. Beside the cruelty to the bees, there may be loss financially, for example, suppose the colonies are smoked as they are examined until all the bees are subdued and retreat, this stops the working of the colony at least an hour. Now if the bee handler goes over a colony in every fifteen minutes he will keep four colonies standing idle all

day. This, in the average basswood harvest, amounts to thirty to forty pounds a day, so that an inexperienced workman may waste twice his wages in this direction. Still there are bee-keepers who seek the cheapest help in the apiary, with little consideration of experience, skill, or knowledge. In early spring, smoking or otherwise making a disturbance in the colonies cause discouragement and the bees are liable to abscond or ball and kill their queens, especially on cloudy days.

At another time we may wish to look into the hives to see if they have enough stores, to clip queens or inspect the brood and there are many robbers prowling around. At this time it requires a powerful smoker constantly in full blast, so that clouds of smoke are rolling upward all the time.

Open hives gently, smoke the bees just enough to avoid stings but leave the bees of the colony in possession of the combs so as to have to push them out of the way in grasping the top bars. The bees know or soon see that it is robbers that need their attention rather than the manipulator, and more bees than usual crowd and form in lines in the spaces and on the top bars, and as a robber passes over or attempts to alight several bees will reach for or fly after it, so that no robber can get so much as a taste. As the case may be we may wish to put in combs of honey or feed, and first a comb must be taken out. Now as soon as we shake the bees from a comb several robbers hasten to alight and get their heads down into cells. Poke them harshly and they do not back out but sip as fast as they can. With a cold blast we may puff and puff and puff, and they pay no attention, until the nozzle has been stopped, occupying both hands, and the bellows worked an average of thirty-five times; then they run around and dip into another cell.

In case of a four inch barrel, hot, direct draft, well fed smoker, four pressures or less on the bellows brings a cloud that no bee can endure; the comb may be carried in one hand while with the smoker held in the other it may be guarded until it is safely in the comb bucket. At the comb bucket we may find the lid lined with knots of bees trying to get at the combs on the inside; one such blast changes their mind as they shoot out of the cloud of smoke in all directions so choked as to fall to the ground. Blow a dense cloud inside so if any robber has got-

ten in, it will be choking for breath instead of handing honey out through the hinges of the lid. On arriving at the honey house there too, are found bunches and lines of bees trying to get in at the door and only for dense clouds of smoke no one could enter without admitting a small swarm of robbers also.

One load to a robber multiplies their number at least a dozen times so it saves to begin with plenty of smoke and use it understandingly. Smoke and manipulations in this way, even after robbing has gotten under headway, in large apiaries, will cause them to become less and less troublesome until they give up the business. Such a smoker will effectively stand guard over a comb or comb bucket, or if allowed to remain in the honey house, it will drive robbers from the windows and doors.

A band of robbers learn to detect colonies which have surrendered before the manipulator's smoke by the kind of roar the bees set up and are watchful to pounce upon the combs or in at the entrance at such times, and for this reason the sentinels should not be driven from the entrance; and robbers being always promptly met at the entrance will soon decide that entrances are not successful or customary points to attack.

My smoker burns any dry, hard or rotten wood or barks, cut to one inch square by four long, the same as a stove and is lighted with shavings whittled with a jack knife from a pine stick. Light the shavings and throw them into the fire box and pile the wood on top of the burning shavings. Large, *constant blast*, smokers burn lots of wood, but the wood is the easiest kind to get and prepare. This item is very small compared with the trouble robbers may cause, or the time of the user that may be wasted in fussing with weak, half spirited ones.

I buy of those in the market the one that is nearest right, and alter it to suit my notion. In moving bees on wagons, if a colony becomes unfastened so that the bees pour out, a smoker of this description will either drive them back or burn their wings off which is far preferable to a run away; and I have often stood an efficient guard, with smoker in hand, over teams and men when cultivating land close by the apiary; and teams may be safely driven through the apiary under cover of clouds of smoke.

"Cold Blasts" Fail at Critical Times.—Shavings for Fuel.—The Bingham has no Rival But Could be Improved by the Crane, Valvular Arrangement.

J. H. LARRABEE.



one to manage it. Mr. Cogshall of New York, I think, used a smoker of this kind. He has holes near the bottom for a draft and an appropriate handle. Such a smoker having a large fire box, won't go out easily.

The Clark was never my favorite. The main objection I have had to the Clark was its liability to go out, as there is no forced draft. Unless the fuel is of a particular kind and very dry, it will often be found at the critical moment to have taken Mr. Root's pledge and "given up smoking."

The Quinby is a very good smoker but has no points of superiority and several minor points in the mechanical construction that induce me to choose the Bingham.

The Hill smoker should be mentioned. It is a very good smoker, but the fire box is too small to suit me. Another thing that bothers me some is the tube running from the bellows through the fire box. This gets in the way and as the draft is not forced the smoker must give way in my estimation to the *old reliable*.

Is it well for the bee-keepers that there is no real rival to the Bingham smoker? I am indeed to think that it is, for in the hands of such a man as Mr. Bingham this best of implements will never be made of anything tending to render it less durable or effective. Mr. Bingham may have a sort of monopoly of the smoker and honey knife business but we want monopolies of this kind, to furnish us the best goods at reasonable prices.

My favorite fuel for a smoker is planer shavings. I have used with moderate success hard wood, rotten wood, cobs, and rags, yet all of these blow cinders and bits of fire into the hive. After you have learned to use

THE first smoker I ever used was a tin pail with a shingle on the top. This was a good one yet I gave up using it because it was not as handy, or perhaps I might call it more *handy*, requiring two hands instead of

planer shavings it will surprise you how easily the smoker is filled and how long it will remain burning when left for a time. I think there is more creosote formed with this fuel than with any other and this is a bother when it runs down the outside of the nozzle.

Now, since I prefer this fuel, I want a larger smoker than the present *Doctor*. My idea of a smoker would be the Bingham made with a four inch tube about two inches longer than the one at present used on this smoker. Such a smoker you would at once pronounce as too large and unhandy. But why unhandy? The difference in weight would not be noticed and appearance counts for but little by the side of utility.

I wrote the foregoing without having read the leader of Mr. H. upon the subject. I had imagined that I would be almost alone in advocating planer shavings, and here the editor himself comes out with me. I learned the value of shavings from Mr. Heddon's writings, and as Mr. Heddon and the editor have largely worked together in their ideas I doubt not but the latter imbibed at the same fountain that I did. Anyway, his ideas of how to light the smoker fit mine to a dot. The description is very graphic. If one gets just the hang of the thing it is quite easy to ignite the shavings and get the smoker warmed up to the "holding on" pitch. I was somewhat amused to see Prof. Cook and his students attempt to start a fire in the smoker. Not being used to this fuel, they first filled the smoker half full, then after burning of fingers with the match they got a thin blaze to stream up from the match and a few ignited shavings, when the fire box was quickly filled and the nozzle clapped on, puff! puff! no smoke.

I think that the new improvements in the Bingham whereby it is unnecessary to tip the smoker upside down to blow smoke into the top of the hive is a vast improvement, I know how it works having seen and used a similar device on the old smoker made by Mr. Manum. It was, and is, a very good thing.

I have also seen Mr. Crane's improvement upon the Bingham. It is very ingenious and if Mr. Bingham could get hold of the idea and apply it to his smokers we would have one more improvement. I think we do not care so much for 25 cents added to the price and cost of a smoker as we do to have the implement as near perfect as possible.

I have never been troubled by sparks drawing back into the bellows and burning it as some have reported. The main improvement would be to increase the force and volume of the draft and do away with the screen at the entrance of bellows. By the way, I have noticed that the last smoker from Mr. Bingham has no screen nor any provision for one.

How little smoke is necessary when the hives open without jar and the frames can be easily removed for examination. I have clipped many queens without using a puff of smoke, yet a very little is best. With black bees great care must be exercised in the use of smoke to prevent *running* and *boiling*. No other race that I have handled are thus effected by smoke; an excessive amount of smoke does not seem to produce much effect upon the Italians or Carniolans, but often too large an application upon the Syrian race will increase rather than allay their anger.

The necessity for using smoke in excess at the time of removing honey from the hives is past. For this purpose the bee escape ranks, in my opinion, as equal in importance to the queen excluder or the queen cage or any other indispensable article of the apiary. I would never use a bit of smoke in a cellar filled with bees. Every hive will be effected by it. Also never smoke a colony that is being robbed, and lastly never smoke yourself.

AG'L COL., Mich.

July 2, 1892.



Apicultural Experiments—To be Conclusive

They must be Carefully Conducted

Upon a Large Scale.

R. C. AIKIN.



YOUR readers I have now had a description of the dequeening system as we practice it. The system is no child's play. Success will come only to those who attend strictly to business. Even with the closest attention to business a beginner should not attempt this system,

except with a few colonies, until he knows he understands what is necessary to success.

This leads me now to offer some thoughts on "Apicultural Experiments." I quote this title because Mr. Elwood and Prof. Cook have already written somewhat at length on the subject in *Gleanings*. I have had in mind for several months the idea of writing some thoughts on this subject. Mr. Elwood and Prof. Cook have given more general thoughts, B. Taylor, too, has gotten ahead of me in the June REVIEW. Bro. T., I will try and give you some thoughts that possibly may help you.

Some months ago I had some correspondence with J. H. Larrabee of the Agricultural College, Mich., in regard to trying some experiments. He said he had already so much to do he could not undertake what I had outlined for him. I also asked Prof. C. P. Gillette of the Colorado Agricultural College, (located in this county) to try the same. He, too, had not the facilities to do the work as it should be done. Perhaps if we moved in the matter as we should, we could get more done for us by both the State and general government. If the "300,000 bee-keepers" would each contribute 50 cents, we would have the sum of \$150,000, which if rightly used would accomplish more in conducting experiments than three or four times that amount used by private enterprise scattered here and there, with inadequate and limited facilities, as nearly all private enterprise must necessarily be. Suppose now I should undertake by experiment to determine which was the more profitable, dequeening, or natural swarming. The easiest way to determine the matter would be to take an apiary of 100 or more colonies, then run half by one system and half by the other; close judgment would be necessary when dividing or setting apart the stock for each division. If the test is to be anything like a true test, I should know the exact condition of each colony at all times. The old and poor queens, if any, should be equally divided, and I must constantly watch the progress in brood rearing in each division. I suggested to Mr. Larrabee to select two colonies exactly alike, managing one by dequeening, the other by swarming; well, he shot right back at me the questions "can you tell when two colonies are exactly alike" and "have you not seen two colonies apparently alike yet give altogether different results?"

To the first I answer both yes and no. As a bread and butter winner, no; as an experimentalist, equipped for thorough work in minute details, I say *yes* I will *know* that the two colonies are exactly alike.

To the second query my answer is there must be no "apparently" about it, we *must know*, else we fail and the experiment would be practically barren.

The two colonies selected should have young queens, better, if sisters of the "same litter," then so carefully watched that I know their condition at all times. I will illustrate by one point how carefully all must be guarded.

Suppose the honey flow is short: opening July 1st and closing the 10th. Doolittle says 37 days from the egg make a field bee. I will call it 40 days. May 10 to 20 queen No. 1 gives me four combs of eggs, and No. 2 only two combs. The succeeding 10 days (say 20 to 30) the order is reversed, No. 2 gives four, as against two, in No. 1, then they keep even pace. The result would be that at the close of the flow the colonies would be of about equal strength. Yet queen No. 1. had in the field, as honey gatherers, two combs of brood more force than did No. 2. Other things being equal, No. 1 would give probably $\frac{1}{4}$ or 1-5 more honey than No. 2: yet *the ordinary apiarist* would report the two colonies *just alike*.

In the journals I read reports of many experiments, mostly by non-experts, the experimenter claiming to have settled some point. Yet in nearly every case some important factor is overlooked, of course the point is NOT settled.

By far the easiest way to test the value of the different systems, is by managing a large apiary (or apiaries) with not less than 100 colonies, on each side. They should occupy same field, the same kind of hives, and be under the care of same apiarist, I would be willing to put a few dollars into stock in an experimental apiary, one that could be run with proper facilities and not be obliged to work for profit. However, I believe such an apiary could be made self-sustaining, and even pay a dividend.

Some of the more strictly scientific points in the anatomy and physiology of the bee, and the various functions etc., could be left to such men as Professors Larrabee and Gillette who can have expert help on all points. I do insist, that to be conclusive, these tests must be made with proper facili-

ties in the hands of competent men to detail reports of the work done. With a limited stock *much more care and skill* is required, and a much larger proportionate expense, to give the same reliability to the tests, when making comparisons between the various systems of management.

Prof. Larrabee, devoting his whole time and the stocks he can handle, if he undertakes many experiments cannot do them justice. He should have more help. It is enough for him to have charge of the work and do the necessary *thinking* without having to do the most of the manual labor.

Thought, yes *intense thought*, is needed to make the results of the work satisfactory.

LOVELAND, COLO.

June 24, 1892.



The Revolving, Non-Swarmer and What is Expected of it.

B. TAYLOR.



THE Revolving, Non-Swarming Hive Stand, looks splendid in the picture, does it not Brother H? The shop is visible on the left, and the iron curing house on the right, with house a piary door just visible, barn and big pines in the rear

with the two troughs for watering the bees between shop and revolving stand. This stand is made by bolting six 4x4 pine scantlings seven feet long, to an old cast iron mower wheel. Three cedar posts are then set firmly in the ground and bound together by nailing 2x8 joist on each side of them and in the center post an iron gudgeon receives the wheel and holds it in place. The stand turns so easily that a child's finger can move it. On the end of each arm a nice alighting board is permanently fixed and a hive is placed on each arm, this makes the hives accessible from all sides and is a very handy place to do all kinds of work. The hives are 29 inches, long 16 wide and $7\frac{3}{4}$ deep, and when full contain 19 combs $6\frac{1}{4} \times 13$ inches inside measure. The top is covered by three plain boards $9\frac{1}{2} \times 15\frac{1}{2}$ inches, with ends cleated, and holds three supers of 16 one pound

sections—48 in all. I can use one or more of the supers at one time, each cover covering a super when on the hive. A substantial cap with tin roof covers all. I expect to supply room for these great colonies without tiering up, by putting on one super at a time and when that is partly filled giving another, thus keeping partly filled and empty supers on at all times by removing the completed ones, and substituting empty ones as the bees get crowded for room. I will remove sealed combs from the rear of brood nest, for extracting, so the queen will always have empty combs for brood raising.

I turn this stand one-six around each day at noon. I was told by wise bee men that the bees would kill the strange queens at once, but I did not believe them. Josh Bill-

bees will swarm or not. The entrances are arranged for the swarm catcher which is seen at hand. I hope they will not swarm; but if they do I shall catch the swarm and hold it in the catcher over night and then return the queen and part of the bees to the hive from which they came, but the bulk of the bees I shall distribute equally to all the hives, removing combs and giving three or four empty ones to the hive that swarmed.

I put the colonies in these hives on six to eight combs each this spring to start with and have added combs as needed, feeding a little each day when required, and there is a strong colony in each hive. I expect to obtain great results in comb honey from these six hives, and if I succeed I shall construct one or more of 12 to 20 hives each, as I



TAYLOR'S REVOLVING NON-SWARMER.

ings said it was "no use to know so much when nearly all we knew wasn't so." I fear that a great deal of our bee knowledge is of that kind, I thought I could train bees so that they would know nothing about any special hive or queen, and I now change the hives each day without the least shadow of disturbance or annoyance of any kind, the bees work away just as if nothing had happened. Tally one for man's great need, the co-operation of all for the use of all. I do not know from experiment whether these

find it a very handy way to handle bees, the hives being high enough to avoid stooping and the center of the stand makes a handy place to set things; but, however the experiment comes out, the public shall know the facts.

Let me say here briefly that I have now spent three years in carefully experimenting with spring packing with outer cases, and I now declare emphatically that with me it does not pay.

FORESTVILLE, MINN.,

June 21, 1892.

Comments on a Beginner's Day Book.

No. 8.

E. E. HASTY.

AT THE beginning of August my bee-botany bump was quite prominent. The condition of the honey producing flowers is given the first day, comprising white and red clover, buckwheat, basil, button bush, boneset, meadow-sweet, golden rod, horsemint and sumach.

"August 3rd, 1880. Cool and some cloud. Thermometer 54° 69° 55°. Run 1 oz. Loss by night 5 oz. First sale of my own crop of honey. Took a walk P. M. to see where the bees worked. Saw a bee at ironweed. Veronica seems an excellent honey plant—pollen light brown. Also saw many bees at *Eupatorium fistulosum*. The other plants on which I saw bees are old standbys."

Probably I was too green to consider that a cool day, with very little honey flow was hardly the time for such an expedition. There was this advantage however, I could see what flowers were giving some honey when others were giving none. Little by little we nearly all of us seem to be giving up our expectations of realizing anything by botanical efforts of any kind. I spent quite a bit of effort and time at cultivating veronica; but nothing is likely to come of it. One can, to be sure, feather his nest a little by starting sweet clover by the roadsides; but if you do that you are likely to be more unpopular among your neighbors than was Saxe's man who invented early rising. I don't blame people for not wanting their roadsides and fence corners turned into impassable cane brakes by sweet clover, even if it is fragrant and cleanly. As a jurymen I don't know but I would award damages against the culprit, if the legal road were clear. But if the ironweeds already by the roadsides could be persuaded to follow the good example of this one, no one need cry.

"August 4th. Cold morn; pleasant day. Thermometer 49° 80° 61°. Run 12 oz. Loss by night 2 oz. Colony 1—4 gave a fair sized swarm with fertile queen. (Italians.) This is a repeated repeat—third time the same queen has led out the same colony this season—the dates being May 12th, June 22nd, and August 4th."

We have talked enough of excessive swarming already, but just silently look at this business once. As to weather and honey flow, this record shows a cold night does not prevent a run of honey if the mid-day temperature is hot enough.

"August 7th. Trial of my new portable honestent. Awkward and hot, which I expected; but bees did not, as I feared, get furious flying inside of it. On the whole it is a success, although it is some trouble to get the bees out of the top of it."

Yes, a good tent to open hives under during robbing times can be made a success; but in the course of years we catch on to a more successful success by avoiding all that kind of work. The framework of this tent long ago rotted down unused, and one of Root's folding tents has been in the lumber-room so many years that I cannot at this moment tell whether it is serviceable or not. My device was a large light frame of strips with a muslin cover that was to be pulled off and kept in the dry when not in use. The bottom hem was full of pebbles to make it hug the ground close, and the frame had hooks and a comb-holder attached inside as working conveniences. There was no door to it, entrance being had by lifting up the cloth.

It is one of the curious things of our craft how civil bees will be when they find themselves shut into an inclosure with their keepers. Very little smoke is needed; and you can take off your veil, which will partly compensate the increased heat. Outsiders naturally think it a sort of man-in-the-lion's-den wonder. In public shows of bee-manipulation the thing comes in as a sort of trick. The audience do not dream else than that the hero is exposing himself to extra dangers under the wire cloth solely to keep the bees from stinging the beholders.

"August 10th. Found at 12—4 immense numbers of eggs in drone cells—fertile workers or drone laying queen. Many cells had seven eggs in them, and some as many as ten. Adjacent worker cells had mostly only one or two eggs each. The eggs seemed to vary greatly in size. Tried to cure the very bad case by carrying all the bees away, and making them fly home. Fear I saw a fertile worker enter the hive, while I vainly tried to kill her."

We used to be given directions in those days to detect fertile workers. Ordinary worker carries wings snug, to get through the crowd easily; fertile worker carries wings spread out by the kneading of the bees, and because accustomed to have the crowd make way for her pseudo-majesty. The fertile worker was supposed to have a peculiar shape of abdomen also. It all may be; but I think few bee-keepers of ten years standing would undertake to pick you out a fertile worker. The whole subject of fertile workers will bear more investigation, but probably in cases like this many bees lay a few eggs each—hence the different sizes—and not being skilled in the art of backing into the cells they mostly choose the biggest cells for the practice. It was alleged that fertile workers would stay in the hive where put, like queens, while the ordinary workers

would one by one fly home. It didn't work in this case—and the plan seems to be no good. In fact, *all* plans for dealing with this difficulty seem to be no good. You use brood enough to make a good nucleus, and have only a poor nucleus to show for it. With persistent fussing it was November before I had this colony with queen, eggs and brood all their own—and the original bees all extinct probably. And the colony petered out in March.

"August 14th, Invention. Four little studs of white wax, warmed with the fingers, are a capital fastening to hold a loose comb in a section."

You see I work sections in large wide frames, and in taking out the filled ones, the partly filled ones sometimes have the tender comb broken out: hence arises the need of a practical plan to put them in securely at one operation.

"August 16. Mysterious state of things at 14—5. About three pints of sawdust piled in behind the division board, a train of it half an inch deep around the crevice between the two stories of the hive, and sawdust scattered thickly over the cushion above. Can it be ants? A few big black ones were running around."

No better solution than that the ants did it was ever reached. The colony was unprosperous, and died the next spring,

"August 17th. Warm day, partly overcast; rain at eve. Run 1 lb. 9 oz. Largest run of honey since basswood. While working in the house tent to day, just as I was closing a hive, the queen came down from above and lit on the cover. Query. Did the tent save her from being lost? Or did it induce her to fly in the first place?"

Evidently the dictum that a fertile queen never leaves the hive except in swarming is a good ways from being the absolute final truth. I still suspect, however, that when the combs are being handled under a tent the queen is somewhat more likely to fly than if only the open sky were overhead. To digress a little, the queen of an unprosperous colony, which cannot give her room to lay, often flies out to "seek her fortune" at other times than when the combs are being handled.

The honey run, like the one commented on last month, shows evidently the forecast influences of a coming rain. A still more marked instance was August 24th, when a shower in the afternoon of a very hot day heralded itself by a run of 3 lbs. 2 ozs. Aug. 27th the conditions were similar, and the run was 3 lbs. 5 ozs.—but the neighbors got the showers and we didn't get any. Same thing again August 31st. This is one of the perhaps that spoil the weather predicting value of the hive scale.

"August 18th. Things look brighter for a honey crop. Many bees hung out all night at 2-9 I opened, and lo, they were full! The sections were bulged with honey—26½ lbs, or 2½ lbs over weight. I smoked most of the bees out of the case, then carried it to the shanty, where I brushed them off from time to time. When nearly all were gone, who should run out and get a brush but the queen! What was she doing there? Hunting for empty cells perhaps."

A little amusing to "old salts" it is to see a youngster "perform" with a full case of honey and bees. My present usage in taking honey before the close of the season is to remove the full sections from the frames at once, and on the spot, and to shake off the bees from one section at a time by giving it a quick and somewhat twirling shake. But for a large apiary, when the crop is large, my way is not rapid enough.

When a hive gets too full of honey queens seem frequently to explore not merely the sections but also crevices a long journey off from any of the combs.

"August 27th. Saw bees picking propolis from some frames. They pinched it off with their mandibles, then, making rapid passes over it with their feet, it was directly taken to the basket, and very loosely stuck upon the ragged mass already there. This was done without taking wing. First trial of Detwiler's foundation rakes."

Bees when they have handiwork (or foot-i-work) to do usually prefer to do it while flying. They then have the free use of six feet; whereas when alight three if not four of them must be used to stand on. I regard this as quite an interesting observation, in that they were loading up their chunks of plunder just as anybody would, instead of proceeding in characteristic bee style. To break off a piece and then hover on the wing until it was securely in place, and then to light and break off another piece is the way one would naturally expect them to work.

Detwiler's foundation rake (or supporter) is an invention entirely superseded and forgotten, but at the time I thought very highly of it. Even now if I were compelled to use brood foundation as freely as some do I should go back to the rakes instead of using wires. Contrariness perhaps. By the way what would become of this world without contrariness? What if war secretary Stanton had *not* been contrary? And if Grant had not been an awfully obstinate man the war might have lasted a year longer, and cost another 100,000 lives. And were there not some saints endowed with the grace of contrariness (so-called) Satan would crowd the institution which calls itself the church into his pocket entirely out of sight—But

Det's invention? Ah, yes. His first method had been to dip sheets of tin foil in the wax, thus rolling a foundation that *couldn't* stretch; but that was expensive, and there were some other objections. His next plan, the one of which I speak, was to have the foundation partly supported while the bees were drawing it, on the points of a dozen or twenty tiny rake teeth temporarily struck into it. When the combs were sufficiently advanced the rakes were withdrawn.

RICHARDS, Ohio. July 30, 1892.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN, AUG. 10, 1892.

CALIFORNIA will not furnish much honey this year.

W. D. SOPER's address is Jackson, Mich. I see that by some "Hocns Poens" the state was left off the address to his ad.

"SWARMERS" is what some folks are calling the self-hivers. Why call them "swarmers?" They don't swarm the bees, they *hive* them.

THE PROGRESSIVE BEE - KEEPER suggests that there ought to be two classes for exhibiting Italian bees at fairs—one for the three-banded and one for the five-banded or golden. Good idea.

"FEEDING BACK" extracted honey to secure the completion of unfinished sections is proving profitable with Mr A. E. Manum. Very properly, he adds $\frac{1}{2}$ its bulk of hot water.

A MOBILE HONEY HOUSE, one that can be taken to pieces, loaded on a wagon, taken to an out-apiary and put together again, is owned by A. N. Draper, and a detailed description of its construction appears in the *American Bee-Keeper*.

OVERHEAD PROTECTION, in the way of shade, is needed by the bees in summer, but it is necessary for the good of the colonies that the sun shine on the ground in front of the hives to a distance of from 25 to 50 feet; so says Bro. Hill of the *Guide*, and he speaks from experience.

DIFFERENT COLORED HIVES aid the bees in locating their homes, says Mr. Manum in *Gleanings*, and I know that it is true, but there are so many manipulations in the apiary that are aided by having the hives exactly alike, in appearance, that I would never paint hives different colors.

THE WHITE MOUNTAIN APIARIST, formerly printed two pages at a time on a job press, is now printed on a Campbell press owned and operated by its editor. Five persons, including the editor, now find work in the office of the *Apiarist*. There are promises that the *Apiarist* will be out more promptly in the future.

BRO. ALLEY has sent me two self-hivers, and each has caught a swarm since their arrival. They will catch the *whole swarm*. There is no mistake about it. The reason is that the bees in leaving and returning to the old hive, in their every day labors, pass through the hiver, and when they swarm the queen is caught near the outer entrance of the hiver, and when the bees return they stay in the hiver with the queen.

THE BEE - KEEPING EDITORS are all now on pretty good terms with one another. If there is one of them holding a "grudge" against another member of the fraternity, I'll tell him how to get his revenge, if he must have it. Let him keep perfectly still about it, but go quietly to work and so improve his own journal that it will "run out" the other fellow.

MIGRATORY BEE - KEEPING is proving a success with one man in Florida. Arthur F. Brown writes: "I have about 10,000 pounds of honey gathered from Mangrove by 100 colonies. This was secured as the result of moving my bees, which speaks well for migratory beekeeping. My spring crop was

about 100 pounds per colony. I am now preparing to move my bees 125 miles for a fall and winter crop. With proper management and moving we can get *three* distinct crops in a year.



J. H. LARRABEE is no longer in the employ of the U. S. as an experimenter in apiculture. Of course, we all know that his dismissal was not from any fault of his: it was because of a large reduction in the appropriation by congress to the entomological division of the Department of Agriculture. Of course, bee-keepers will regret to learn of this change. The Government is doing very little for apiculture, and one of the most important things that ought to receive attention at the next meeting of the North American is "What the Government Ought to do for Apiculture." I have asked Mr. P. H. Elwood to introduce the subject. At Washington will be an appropriate place to *do* something in this direction.



FRANK BENTON, in a long article in the *Api*, admits that there are a few yellow bees in Carniola, but explains that they were brought in, by a system of migratory bee-keeping, from neighboring provinces. Mr. Benton says that he regards Carniolans as a distinct and well established type—*one of the dark races*, and neither the history of bee-keeping in Carniola, nor his observations while travelling and residing there and breeding Carniolans extensively, would lead him to think that *pure* Carniolans were other than dark colored bees. As I said a year or more ago, the so-called golden Carniolans get their color from the admixture of yellow blood.



GRADING AND CLASSIFYING HONEY.

R. A. Burnett, in *Gleanings*, objects to the use of the terms, "white," "amber" and "dark" in the grading of honey. Instead, he would give the *name* of the honey: that is, the source from which it is gathered. The objections that have been made to this plan are that there are so many kinds of honey and the public in general knows so little in regard to their characteristics, that confusion is feared on this score. After all, it is the only *exact* way in which honey can be classified, and as there are only a few varieties of honey that find their way into any particular market, and these particular producers and

dealers well-know what these grades are, it may be the best way. I think that I never wrote to a dealer describing honey that I wished him to handle, without telling him that it was clover, basswood, or buckwheat. This will continue to be the practice—why not let it be the rule?



THE NORTH AMERICAN will *not* hold its convention in Washington during the G. A. R. Encampment. It is too early: most bee-keepers will yet be busy in their apiaries—not a queen breeder could leave his business. The weather will still be hot in Washington, and the uncomfortably large crowd and many forms of excitement would work against the interests of the convention. Hotels will be over-crowded, accommodations difficult to secure and prices high. But little honey will be marketed at that time, and bee-keepers will not have the money with which to go. These are some of the reasons, for not holding the convention at that time, that have been brought to the attention of the executive board. I favored this date at first because we *must* have reduced rates, but Mr. Frank Benton assures me that there will be other Societies meet in Washington near the end of the year, when, by meeting in conjunction with one of them, the desired reduction in rates may be secured.



A METAL VALVE FOR THE CRANE SMOKER.

I have just received a long, chatty letter from Mr. J. E. Crane. I should like to give it entire, but there isn't room at this stage of the "make up" of the REVIEW. The best that I can do is to make a few short extracts.

Among other things he says "At last I have succeeded in putting together a smoker with a metal valve connecting the bellows and air passage with the fire barrel. It is what I have been trying to do for a long time. The greatest objection to a wooden valve is that it might get wet and swell.—By the way, when Ernest Root was here, he did not see one of my *two*-valve smokers. I called his attention to them and went to get one, but found they were all at the out-aparies. I think I will send him one presently.—I feel that these later forms of my smoker ought to be thoroughly tested before being offered for sale on a large scale. If they continue to prove satisfactory and are wanted, I will either make them or arrange with

some one to do so; or, if, when I have brought up my pet to greater maturity, it should retain its virtue and character, I presume that I will not be averse to an offer of marriage should a suitor as worthy as Birmingham's smoker make proposals. As you suggest, a union of the two might be very desirable."

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NOT PUNIC BUT TUNISIANS.

For the purpose of straightening out some of the "snarls" and learning the truth in regard to the so-called Punic bees, Mr. T. W. Cowan has visited that part of Africa from which the Punics were reported to have been brought. He found nothing except Tunisians and the very man from whom John Hewitt of England had procured the bees that he *called* Punics and offered for sale at ridiculously high prices. Of course, it is a fraud to sell bees for what they are not, but the greater evil, so far as results are concerned, will probably be the introduction of bees that are very irritable and great users of propolis, without having sufficiently compensating good qualities. Bro. Cowan is to be commended for his enterprise in the matter.

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FEEDING AND FEEDERS.

Having finished the subject of "Smoke and Smokers," let us take up the topic of "Feeding and Feeders." In the first volume of the REVIEW the feeding back of extracted honey to secure the completion of unfinished sections received a very thorough discussion, but a discussion of feeding bees under the many other conditions when it may be desirable, has never been introduced into the REVIEW.

Why bees shall be fed, when they shall be fed, what they shall be fed and how it shall be done, are all points that will bear discussion. There is no time of the year when bees *may* not need feeding to keep from starving. There is one time of the year when it *ought* never to be necessary to feed, and that is in the winter. Modern bee culture, with its small hives, reversible frames, divisible, interchangeable brood cases, contraction of the brood nest, and honey extractors, has made it so easy to rob the bees of their hard earned stores, that it is often over-done, and then the act is followed by a neglect to furnish, by feeding sugar, enough stores to last the bees until they can again

visit the flowers that bloom in the spring. The man who is sufficiently acquainted with himself to understand his failings in this direction, ought to use large hives, and never take a drop of honey from the brood chamber. So seldom ought it to be necessary to feed bees in winter, that Bro. Hill, of the *Guide*, took me to task quite severely because I told in "Advanced Bee Culture," how the work ought to be done when by some hook or crook the bees *had* gone into the cellar short of stores.

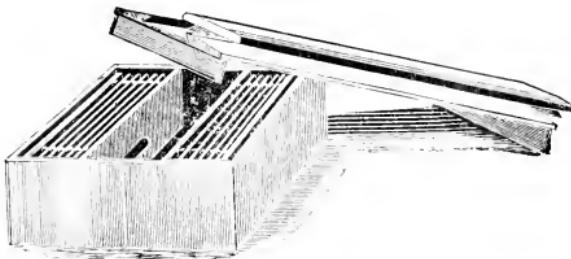
The best method of feeding bees in winter is to give them a frame of honey. If all of the honey is in the hives, look over all of the colonies, or a sufficient number of them to find combs of honey to give the starving colonies. It is well known that all colonies do not consume the same amount of stores, and the variation is so great that it often happens that enough combs of honey may be spared from those that have plenty, to supply the needy. If no honey is available, and some colonies *must* be fed, a candy made of granulated sugar is the best substitute. It may be caked in shallow dishes and the thin cakes laid over the bees and covered with enameled cloth and two or three thicknesses of old carpet. Or the candy may be "run" directly into the frames and the frames hung in the hives adjoining the clusters of bees. "Good candy" is also recommended for this purpose. Thin boards are tacked to one side of an empty brood frame, thus forming a shallow tray. It is then filled with candy and the other side covered with boards except a small space at the top which is left for the bees to enter.

After the bees are placed upon their summer stands it is better that there be sufficient food in the combs so that feeding will not be necessary until settled warm weather has come. Right here is where I believe that bee-keepers have made their mistake in practicing stimulative, spring feeding—they feed too early. All that the bees need is plenty of food already in the combs, and protection from extremes of temperature. Brood rearing needs no encouragement at this stage of the programme. The vitality of the bees should be preserved and reserved until it can be used to the best advantage. If brood rearing is commenced in earnest in time to bring the colony up to its maximum strength at the beginning of the main honey harvest it is better than to have it reach this pitch earlier in the season. After the season

has advanced until warm, pleasant weather is the rule and the first "brood" has hatched out, and the bees have commenced to boom, then is the time to *keep them booming* by protection and by feeding when there is not enough honey coming in to do this. After brood rearing has commenced in real earnest there ought to be no check. On the contrary, it ought to go on increasing, reaching its maximum at the opening of the main harvest. Where the harvest comes early and is of short duration, as is the case where it comes from clover alone, there is no hope of success unless the colonies are in prime condition at the opening of the harvest, and in all earnestness let me ask if there are more potent agencies, in bringing about this result, than protection, and feeding when necessary?

I am not sure what style of feeder is best for this spring, stimulative feeding. By the way, I do not like the word "stimulative" as applied to this kind of feeding. I would feed simply to take the place of the natural honey flow when the latter fails. A feeder

upper edges of which are "bee-space" below the cover. The reservoir is in the center, and just over it a part of the cover slides back in grooves to allow the feeder to be filled. The inside partitions, next the reservoir, reach the cover but do not *quite* reach the *bottom* of the feeder. This allows the feed to pass under the partitions and rise up between the thin slats. While this feeder is preeminently adapted for the feeding back of extracted honey to secure the completion of unfinished sections, or for feeding bees for winter, I know of no reason why it is not just as suitable for the spring feeding of which we are talking, as is any other feeder. If some other is better, the object of this discussion is to make that discovery. The Heddon feeder will answer as well as any for an open-air feeder; but, after giving this style of feeding a pretty fair trial upon several occasions, I cannot give it a very warm approval. In my apiary there were no other bees within range, but the difficulty is that if a spell of cool weather prevents the bees from flying, no food is brought in at a



THE NEW HEDDON FEEDER.

ought to possess the following points. It should allow the apiarist to learn if it needs filling without its being removed. It should allow of re-filling without coming in contact with the bees. It should not be accessible to robbers nor attract their attention. I doubt if there is any advantage in a feeder that places the food in *close* contact with the cluster. If the weather is so cool, or the colony so weak in numbers, that the bees will not leave the cluster to visit the feeder, I have my doubts as to the advisability of feeding. The Heddon feeder is the first one that I ever saw that I thought enough of to make and use. It is exactly the size of the top of the hive, and the bees come up at the openings on either side. They pass over and down between the perpendicular slats, the

time when it is most needed. Besides this, the colonies that stand the most in need of feeding are quite apt to be the ones that take the least. With open air feeding I have seen the combs of some colonies fill up, and white burr combs appear on the tops of the frames, while other colonies would show scarcely a trace of any feed brought in.

The fact that honey contains nitrogenous matter would lead one to think that it would be the best food to give colonies that were heavily engaged in brood rearing, but when there is an abundance of pollen in the hive, or being brought in, as is usually the case in this locality, sugar, at the present prices, is decidedly the kind of food to use.

More honey can be secured by giving the bees an abundance of room in the supers to

the very end of the harvest. This results in a larger proportion of unfinished sections, but from the "feeding back" of about 16,000 pounds of extracted honey, I know that these sections can be finished up at a profit. This part of the subject was once so thoroughly discussed in the REVIEW, and the gist of the whole matter afterwards gathered into a chapter of "Advanced Bee Culture," that it would scarcely be fair to old subscribers to go over the ground again. If any new subscribers are interested they can either buy the back numbers containing the discussion or the book just mentioned. I am not saying this to advertise, as I should be perfectly willing to go over this part of the subject again if the majority preferred it.

Fall feeding, to give the bees an abundance for winter, is the next kind of feeding that demands attention, and for this purpose I think that nearly all will agree that sugar is the best food. Instead of trying to get a bounty on honey because there is one on sugar, let us try getting all of the honey possible from the bees, replacing it with the cheaper and safer sugar. Let us so manage the bees that the close of the season finds them destitute, because we have taken away the ten-cent honey and it can be replaced with three-cent syrup.

Let me digress here enough to say that most bee-keepers dread feeding because this part of bee-keeping has been given less attention than some of the other branches; they have not been educated to feed and have not the proper arrangement for doing the work. Most of bee-keepers, when obliged to feed, make the syrup in small quantities, perhaps on the kitchen stove, and then do the feeding with anything that can be picked up. There must be some kind of a tank on a stove in the honey house. This stove may be a wood stove, or it may be gasoline or kerosene. I have always used the latter. The tank must be large enough to make a large quantity of feed at one time. The tank that I used held 100 pounds. There must be a gate at the bottom to draw off the feed. To carry it to the hives, a large watering pot is a good thing. Then have feeders of such a style, and so arranged that it is only necessary to walk along and slide back the covers and pour in the feed. The Heddon feeder will hold as much as fifteen pounds. Two fillings would be sufficient to supply any colony with stores for winter. When feeding is made a *business*, and every-

thing is properly arranged, it loses its annoying features and becomes as pleasant as any aparian work.

Sugar syrup for winter ought to be about the consistency of thin honey, and about one-fifth honey added to prevent granulation. Feeding ought not to be delayed later than September. I have fed earlier than this, but found no advantage in so doing. If done in time for the bees to seal the stores it is sufficient. If feeding has been delayed until it is so cool weather that the bees are not inclined to leave the cluster, they may be fed by putting some rather hot feed in the feeder and setting it *under* the hive, when the heat from the feed will rouse up the bees and they will come down and take the feed; but feeding ought not to be neglected until this plan is necessary.

To know how much honey to feed, take enough combs from the hives to fill a hive. Extract the honey. Put them in an empty hive and weigh all together. Add from three to five pounds for the bees. Weigh each colony, deduct the weight of hives and combs, and the remainder will show about how much honey is in the hives. For out-door wintering I feed until there are twenty pounds in each hive; for in-doors, I give fifteen pounds. Very large colonies might need more. Better have too much than too little.

There, friends, tell me what errors I have made, and what important points I have left unnoticed, and I will put your views in the September REVIEW, so that those who must feed for winter may have the advantage of the wisdom that comes from a multitude of counselors.

EXTRACTED.

Horizontal Wiring a Great Success.

"To test more carefully horizontal wiring we have been trying frames with three, four, and five horizontal wires, for the purpose of determining which number of wires would give the best results. Three wires, such as we have been advocating, do quite well; but four wires are better: but we do not yet discover that the five wires have any particular advantage over the four, because the combs built from light brood foundation on the four wires are very nice. From some careful experiments we have been making, we find that the *medium* brood foundation gives rather better combs than the light brood, under the same conditions. We therefore

recommend four horizontal wires and medium brood foundation for the Langstroth size of frame. This brings the wires about two inches apart. Try the experiment yourself; and if you can get more perfect combs in any other way, we should like to know it. Those we have are as smooth and even as the surface of a board."—*Gleanings*.

— • • —
Thick top bars Prevent Burr Combs.

"Perhaps some of our readers would like to know how thick top bars are doing as regards presence or absence of burr combs. Some of them have been in use now for three years, and they are perfectly clean to day so far as spurs of wax are concerned, although they are soiled as a matter of course with propolis. It is such a comfort to pull off the covers of hives having these frames in! The bee-keeper who has tried the two kinds of frames in hives side by side, the old burr comb frame and the non-burr comb, we are sure will declare that he will never, never go back to the narrow top bars."—*Gleanings*.

— • • —
Some Extra Large Bees.

Mr. J. P. Murdock, of Oxford, Fla., writes me that he has some extra large bees, so large that thirteen of their worker cells measure three inches, seven drone cells two inches, and more than half the bees fail to pass the ordinary perforated zinc. He says these bees are the result of selection in breeding from an Italian queen imported eleven years ago. He has sent me a copy of the *Florida Dispatch*, containing an account of his experience in getting these bees, and of his discovering their unusual size, and I make the following extract from the article.

"Last season all who saw my bees would remark, 'what big bees!' This occurred so often that I concluded to test the matter and see how well I had succeeded. So I sent to a number of our bee men of the North a sample cage, and asked in return a similar favor. In the meantime I rigged up a balance, by which I could weigh to sixteenth grains. By this I found the heaviest dozen went a little more than twenty-three grains, and the lightest about seventeen grains. Now a dozen of mine went up to *thirty eight and and three-sixteenths grains*, more than double the size of some I received. Well, it set the parties who saw these big fellows to 'buzzing' at once, and all wanted to try them. The result is I have at this time a number of these queens North, trying to break the record on surplus. Just here I hear that fellow remark, 'another trick to sell queens.' Not quite, my dear sir, I have the first queen yet to sell for lucre."

I have sent for a queen, and expect to know something about these big bees by actual, personal experience.

Advantages of Spring Feeding.

Feeding bees in early spring, and thereby stimulating them to rear a lot of brood that will probably be chilled by a "squaw winter" is not profitable; but I have often thought that many bee-keepers might profitably feed their bees from the beginning of settled warm weather until the flow from clover commenced. If the bees were in chaff hives, or protected in some other manner, the feeding might be commenced earlier in the spring. I have known a cool rainy spell to come on after fruit bloom, and last for two weeks. Breeding ceased almost entirely. White clover found most of the colonies with empty brood combs. The first thing that the bees did was to fill the brood combs with honey. The next thing was to swarm. But little work was done in the sections; the swarms were small and but little brood was left in the old hive. The flow from white clover was good but the results were meager. A pound of sugar fed each day to each colony during the honey dearth would have kept the combs full of brood and returned its cost four fold. I can but feel that even in ordinary seasons it would pay to feed, when little honey is coming in, from the first of May to the beginning of the main harvest. The combs will then be full of brood and food, the hive full of bees, and when the honey comes, the army of workers can do nothing with it except to put it in the supers. Who has not noticed the difference in results between a colony that is all ready for the boxes at the opening of white clover and the one that is not ready until clover is about gone. This is a subject that I thought upon much this last spring, and, if nothing prevents, I shall give it a trial another year. The following editorial in the *Bee-Keepers' Guide* for July, shows that its editor has not only done some thinking in this line, but has been putting his thoughts into practice.

"This matter of feeding bees during a honey harvest is slightly an out of the way feature in bee-keeping. Yet there has not been a time during these two months when a quart feeder full of syrup would not be very acceptable to any colony in the apiary. We have fed two barrels of sugar and some glucose. We are not sure there is any advantage in feeding the latter; it is so sticky and tough when it is evaporated down to the consistency of honey the bees seem to handle it with difficulty. We have, in our apiary, a large galvanized tank sitting on brick so arranged that we can build a fire under it. In this we can convert at one time, a half barrel of sugar into syrup. The

tank has a tight cover : when filling the feeders it is shoved back far enough to admit of dipping the feed out ; it is then used as a table on which to place the empty and filled feeders. The time of feeding is usually after six o'clock. We fed to fill up the brood chamber that the bees might be ready to commence in boxes as soon as it ceased raining. It continued to rain and we continued to feed, beginning with one feeder full to the colony, per day : finally our enthusiasm grew until we put a tier of boxes on each of sixteen colonies ; not only would we have them fill the brood chamber but commence working in the boxes, and accordingly we gave each colony every evening two feeders full. For syrup we used soft A sugar, mixing one pail of water with two of sugar. We soon discovered that more water was necessary to make the food thin like the nectar gathered from flowers that it might be taken from the feeders more readily—the bees seeming to prefer sweetened water to a thick syrup. We found by mixing twenty-four hours before using, that the heat of the sun was sufficient to dissolve all the sugar—no fire being necessary. In this case the feed will soon sour and all that has been prepared must be fed each day, otherwise a fire will be necessary to heat it thoroughly. Two quarts of feed per day would not induce the bees to store any in the boxes. The brood chamber was filled to excellent condition and a number of the colonies swarmed. We demonstrated conclusively that sugar syrup, even in bad weather, makes strong, thrifty colonies, and that in apiaries of one hundred colonies barrels of it might be used in the brood chamber without danger of any being stored in the section boxes. The basswood trees are now coming in bloom and the feeding may prove quite profitable yet, as the feeders, being placed on or above the boxes, induced the bees to cluster in them and lengthen out the comb foundation starters, in a few instances building a little comb. The great decline in the price of sugar makes feeding, with profit, possible, and experiments in this line are of much interest. In an extraordinary season, like this, by all means we should feed the bees, and even when the season is ordinary, we think good, thrifty, well fed colonies are more likely to be profitable than those left to take their changes with the weather and season. With the tank, feeders and hives all conveniently arranged a half barrel of syrup can be given the bees in one or two hours, after which the next day's feeding may be prepared. Near the close of the season it is sometimes profitable to bunch the unfinished sections on the best colonies and feed extracted honey. In such cases the extracted honey should be mixed with one-third hot water, not less than four feeders full being given a colony at a time and more would be better. They should be refilled as soon as empty until the sections are all finished."

I can endorse all that Bro Hill says in regard to the ease with which feeding can be carried on when there are proper arrange-

ments for doing the work. Most of bee-keepers look upon feeding as a sort of evil, something to be dreaded, but with the right kind of arrangements for preparing the food, and the right kind of feeders, there is nothing disagreeable about it. I do not know as I ever enjoyed myself more than I have in feeding back extracted honey to secure the completion of unfinished sections.

How the Punics Behave at Medina.

The Punic bees at Medina are now old enough to stand up for their rights. It seems that they demand respectful treatment even if they don't wear striped paniers. Ernest Root tried to show them off to his father, and then printed the following account of their tantrums :

"Our Punics are doing no better in honey—indeed, we doubt whether they are doing as well—as the average colony of Italians of equal strength ; and, with the exception of the Cyprians, they are the *meanest* bees we ever brought into the apiary: July 4th we wanted to show A. I. R. the new race. He at once suggested that we open the hive without smoke, which we did, perhaps a little unceremoniously. The air was immediately filled with hundreds of mad bees : and so persistent were they that we gladly ran for a veil and smoker, although A. I. R., true to his aversion for bee-veils, crouched down under a sheltering grapevine, with his hands up to his face. We then smoked the bees, but they boiled all over, about as bad as black bees, and, like black bees, they would hold themselves suspended on the wing, perfectly motionless, apparently, with the exception of the wings, right before the eyes, in a tantalizing way. By the way, we would prefer to be stung, and done with it, than to be held in constant fear of it. The next day one of our boys attempted to run a lawn-mower some few rods away from the Punic colony ; but he was very glad to put on a veil, and even then the little scamps pestered his hands. When Mr. Langstroth was here, and shortly after, we took every precaution to keep the bees quiet, or, at least, not to arouse them unnecessarily for we did not wish to test the temper of a new race of bees in the presence of one whom, at his advanced age, stings might be next thing to serious. The bees were also younger when he was here, and, of course, gentler. Now that they are two or three weeks older, they are regular little demons, unless handled carefully. We should state this, however, that they delight more in bluster and angry buzzing than in actual stings.

In our last issue we stated that they were the worst bees for depositing propolis we ever saw. For example, we have a crate of sections on their hive ; and even before there was an ounce of honey put in them

(there is not more than a few ounces now in the whole crate) these Punies besmeared the sections all around the edges in six days in a way that is worse than any hybrids ever thought of doing in six months. If our Punies are a fair sample, we do not see how any one can regard them as gentle; and more and more they are beginning to show the regular characteristics of the common black bee."

Perhaps some may ask why I print only unfavorable accounts of these bees. It is because I see no other, except those that come from persons interested in their introduction.

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THIN, FLAT BOTTOM FOUNDATION HAS NO FISH BONE IN SURPLUS HONEY.



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1892.

Don't you want large, beautiful Queens, producing Bees that will just please you fully? Well, my Italians are in the lead—so my customers say. 1,048 queens sold and have heard of only two misnamed. Orders booked now and will be filled in rotation. 10 per cent off on all cash orders received during January. Warranted Queen, \$1.00; 6 for \$4.50. A select Breeding Queen, yellow to the tip, \$2.00. Will begin shipping May 1st. 1-92-ff

W. H. LAWS, Lavaea, Ark.

Elmer Hutchinson,

Vassar, Tuscola Co., Mich., can furnish untested, 5-banded, Italian queens at \$1.00 each; 6 for \$5.00. Tested queen, \$1.50. Breeding queen, \$4.00. 6-92-ff

Second Hand

Supplies.

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hand supplies that
I have been advertising
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100 old-style, Heddon surplus
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case, they have no superior); 25 slatted
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good as new.

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12-lb. shipping cases in the flat at 10 cts.
They were made by Dr. Tinker, and cost me 11 cts. each, besides the freight. They
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I would sell any of these articles for cash,
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EARLY CARNIOLAN QUEENS.

From May 20th to June 20th, \$1.50 each. After
the 1st of June there will be two breeding yards,
one for Carniolans and one for Italians, and
queens of either variety will be sold as follows:
Untested queens, 75 cts. each; three for \$2.00;
six for \$3.00. After June 20th, tested queens of
either variety, \$1.00 each. For further partic
ulars send for circular. 1-92-ff

JNO. ANDREWS, Patten's Mills, N. Y.

If you wish to advertise anything anywhere at
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Golden, Honey Queens.

Queens in Aug. untested, 75 cts., one-
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Select tested, \$2.00. Extra select, \$4.00.
The very best, \$7.00. Imported, \$4.00.
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ITALIAN
QUEENS
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Untested, 75 cts. Tested, \$1.00.
Extra selected, \$3.00. Six queens
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The past 47 years of careful breeding have wrought great changes in the Italian bees as regards their color and honey gathering qualities. I am now rearing queens, in accord with Nature's best way, that are yellow almost to the tip, and have a record of 369 pounds of comb honey from a single colony one season.

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50

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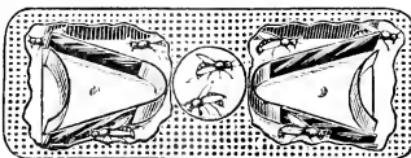
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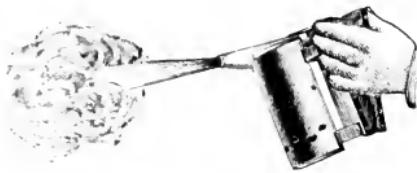
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Cts. a Pound. \$3.00 Sections
Only \$2.60. Bingham Smokers at Cost. Free Price List
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For the past three months I have been using on Odell type writer. It is the best, low priced machine with which I am acquainted. Its work is equal to that done by any type writer. I doubt if so great speed can be attained as is the case with the keyed machines, but I can write more rapidly and easily than I can with a pen, and I presume that those receiving my letters can read them with greater ease and certainty. The machine is simple, easy to learn and not likely to get out of order. There are two styles, one costing \$15.00, and the other \$20.00. The Odell Co. has asked me to take the agency for the sale of the machines, and I shall be glad to send specimens of writing and illustrated descriptive circular to any one thinking of buying a type writer. W. Z. HUTCHINSON, Flint, Mich.

For Sale,



25 Colonies Italian Bees

At \$2.50 each! In good Simplicity hives full of honey. Am in other business and MUST sell. Would trade for good property.

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OTTO J. E. URBAN,
3-92-12
Thorndale, Texas.

1852.

REDUCTION ON THE PRICE OF

1891.

Langstroth on the Honey Bee.

(REVISED.)

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4-92-12

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CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

S.P. 10, 1892



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To introduce the Progressive Bee-keeper, I will send it one year and a beautiful queen for \$1.15. Regular price of queens, \$1.60; or six for \$5.00. Warranted purely mated and safe arrival and satisfaction guaranteed.

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Cuts Furnished for all illustrating Purposes.

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Are my specialty. I make the Benton cage in many styles and sizes. A light cage saves postage; a neat cage creates a favorable impression; one properly arranged carries its occupants safely in either hot or cool weather; and my special machinery and large trade enable me to furnish extra nice cages, having all these advantages, at a very low price. Sample cages and prices on application.

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Of honey is one thing; to sell it at a good price is another. To bend every energy to the accomplishment of the former, and then neglect the latter, is a mistake. Whether it is advisable to develop the home market, and, if so, how it shall be done; whether the honey shall be sent to a distant market, and, if so, when and which one; whether it shall be sold outright or on commission, and why; or whether it shall be peddled, and how—these and several other points are discussed in one of the chapters of "ADVANCED BEE - CULTURE."

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

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Those who have had queens from me say my

5-Banded Golden Italians

Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. *None but the very best Queens sent out;* large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00, 6 for \$5.00. Special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.

CHAS. D. DUVAL,

Spencerville, Mont. Co., Md. 12-91-1f

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ITALIAN QUEENS AND SUPPLIES FOR 1892.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,
1-88-tf. Augusta, Georgia.

DR. J. W. GRENSHAW, Versailles, Ky.,

OFFERS for sale untested QUEENS in June at \$1.00 each. After June at 75 cts. Imported or American mothers. Contracts solicited. Also Celery Plants July to Sept., at \$2.00 per 1000. Also any of Root's goods. 6-92-4t Please mention the Review.

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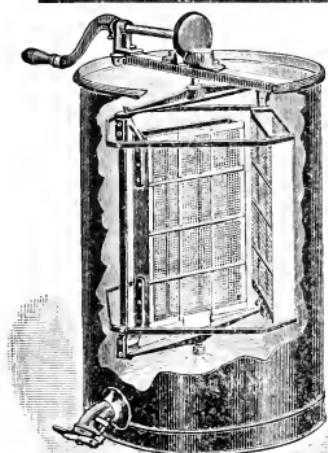


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A Grand Success.

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HONEY EXTRACTOR.**

May be Reversed Without Stopping the Machine.

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It is endorsed also by J. F. McIntyre, an extensive extracted honey producer of California; by W. Z. Hutchinson, Dr. C. Miller, and others.

Price all Complete, Jappanned and Lettered, for L. Frame, \$10.

A. I. ROOT, Medina, O.

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Address **GEORGE W. YORK & CO.,**
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From September 1st, 1892, to January 1st, 1893—4 months—only 25 cents.
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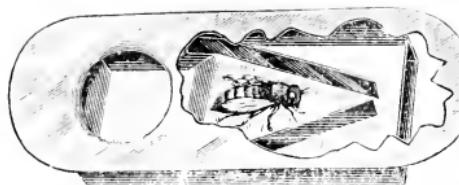
To New Subscribers

Golden, Italian Queens.

Unexcelled for purity, beauty and all other desirable qualities. I guarantee safe arrival. Tested. \$1.25; untested, 75 cts. Miss F. M. M'KNIGHT, Estabutchie, Miss.

50
 1-92-12

Cents will buy a good, two-story, L-hive. Shall we send you one? Send a statement of what you want and we will give you prices. WM. BRIGH'T, Mazepa, Minnesota.

**Porter's Spring Bee-Escape**

Saves temper, time and bees.

PROF. COOK says: "No bee-keeper can afford to be without them."

WM. M'EOY, foul brood inspector of Ont., Can., says: "They should be used in every bee yard in the whole wide world."

THOS. PIERCE, Pres. Eastern N. Y. B. K. A. says: "The time will soon come when all bee-keepers will use them."

Send for circular and testimonials, and read what others say of them.
PRICES: Each, by mail, with full instructions, 20 cts. Per doz., \$2.25. If, after three months' trial, they are not found superior to all other escapes, and satisfactory in every way, return them and we will refund your money. For sale by dealers.

4-92-12 Mention Review.

R. & E. C. PORTER, Lewistown, Ill.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V. FLINT, MICHIGAN, SEP. 10, 1892. NO. 9.

The special topic of this issue is

Feeding and Feeders.

That of the next issue will be

The Construction of Bee Cellars.

Cautious and Comparative Experiments

Needed.—Why Spring Feeding is Not

Profitable. — Why Fall Feeding

Should be Done Slowly.

G. M. DOOLITTLE.



IN all of our experiments with new ideas as applied to bee culture, we are apt to get on a craze and apply the new idea to the whole apiary rather than use the caution which we do in our other business of going slowly

the season they did not know whether they were right or not, for they had nothing in the same apiary that had been left to go on in the "good old way," and with which to make comparisons. However, from the results in the different apiaries about them they were led to believe that the thing was not as good as what they had before been using, so abandoned it.

Another put his whole apiary in fermenting manure in order to secure bees in time for the very earliest blossoms, because some one had said that in this way as large a yield could be secured from apple blossoms as from basswood, but time, that tester of all things, showed him that he had fooled away the most of his bees with little or no honey to show for it.

And so we might go on clear down to feeding, telling of the mistakes which have been made by recklessly conducting experiments with the whole yard, because some one else had made a success of a certain plan. Because friend Hill thinks he has made a success in feeding to fill his hives before the honey harvest, is no sign that I can jump right into that success with my whole apiary, for I am not a Hill; and because Bro. Hutchinson is sure that feeding back pays, does not alter the fact that hundreds have fed back only at a loss, myself being among the latter number. "Prove all things and hold fast that which is good," is as trite a saying to-day as the day it was uttered, and if this article shall have no

and proving things as we go along. For this reason we find men who are usually discreet in other matters, changing the queens in the whole apiary in the month of May because some one has said that by so doing swarming may be avoided and a large yield of section honey secured; and at the end of

other effect than to teach all who read this to go slowly and carefully in experimenting with new things, and rely upon their own powers instead of the powers of others, I shall be well paid for writing it.

Now to the subject: Some years ago I thought that "stimulative" feeding to secure a large honey crop was the thing of the future, and so set apart two rows of hives which contained colonies of bees as nearly alike as possible. When brood-rearing had commenced nicely I put feeders in all the hives in one of the rows, while the others were not fed at all, except to see that all had honey enough to last them at least two weeks, which was done by setting in frames of sealed honey when they did not have that amount on hand. The row having the feeders was fed whenever there was a day the bees could not go into the fields or when nothing was to be obtained from the flowers. At the end of two weeks I was so infatuated over the appearance of those being fed that I had hard work to restrain myself from putting feeders into each hive in the apiary, and thus spoil all the experiment, as others have done. When I saw the brood and lengthening cells along the top bars to the frames, it did not seem possible that these colonies would not so far outstrip those not fed that I would make a great loss by not feeding the others. Skipping over all that intervened, I found that when the end of the season came I did not have *enough* extra honey from that row of colonies fed, above what the other row had done, to more than half pay for the sugar used, while all the extra work done must either count against the *fun* had in the experiment, or go with the half of the sugar which had been thrown away.

The trouble seemed to be that the fed bees wore out faster than those not fed, so that when the honey harvest arrived I had very few more laborers in the fed hives than were in the others. Also the fed bees did not work with the same energy on the flowers when they came, and no feed was given, as did those not fed.

Since then I have tried nearly the same thing again, but in this case it was tried with the end in view spoken of by Bro. H. on page 217, where he says "I have known a cool, rainy spell to come on after fruit bloom, and last for two weeks. Breeding ceased almost entirely." This I had noticed often

in this locality, and I had resolved that if such an appearance ever came again I would try feeding to see if this brood rearing could not be kept up, for the brood now being reared was to be the workers in the harvest. Such a time came and I placed feeders in twelve colonies and set apart twelve others as nearly alike them as possible, allowing the latter twelve to have their own way. The former twelve were fed every night at about sunset, feeding them from one to two pounds of thin syrup each night. It kept cold and rainy for twenty days, there being frosts or freezing nights quite often during the time, and much to my surprise, I found at the end of the cold spell that there was no brood, except eggs and a little unhatched sealed brood, in any of the hives, and not enough of the latter in the hives fed to anywhere near pay for the trouble of feeding. Those who read the bee papers in 1878 will remember of my giving this experiment about that time.

From these and other experiments I have been satisfied with seeing that all colonies had at least two weeks of honey ahead in their hives, and have concluded that with me the spring feeding of colonies *every day* does not pay. If I do not have the combs of honey to supply this two weeks of honey, I fill combs with syrup as I have described in the bee papers of the past.

Another item I wish to speak of before closing, and that is, *how to feed*, when we are obliged to do so in the fall. I see the editor favors feeding a large quantity at once so that two feeds will give plenty of stores for all winter. I used to favor the same thing, but after watching carefully, I find that when thus done the stores are scattered all through the hive and not nearly as well sealed as when fed slower. For this reason I now feed about five pounds daily, and in this way have the syrup stored close around the cluster and all capped over nicely when done. I do not think it matters much what feeder is used, and have no doubt that the Heddon feeder is one of the best. I have used what is termed a division-board feeder, the same holding five pounds when filled, this being so arranged that it would contract the hive when necessary, could be left in the hive when not in use, and in feeding nothing but the cover to the hive need be disturbed.

Uniting Bees and Preventing Robbing by the Use of Carbolic Acid.

J. F. SHIRK.

CARBOLIC ACID may be used to good advantage in uniting colonies or in driving robbers away from a hive that is being robbed. The manner of using is in the form of a solution, one part of acid to seven of water, with one-half drachm of glycerine added to each ounce of the mixture. The glycerine holds the acid in suspension and makes a clear solution. The mixture is applied with an ordinary atomizer, such as is used for spraying perfumery. When wishing to unite two or more colonies I spray the entrances of the hives, say twenty-four hours before uniting, and the travel of the bees to and from the hives during this time gives all the bees the same odor. I have for three seasons been practicing this mode of uniting and have yet to see the first quarrel.

My former mode of uniting was to place one body containing the bees over another with a sheet of wire screen between, leaving the bees in this shape say twenty-four hours, when they would all be scented alike, then removing screen. This plan worked well, but the trouble was that when the weather was hot a great many bees would worry themselves to death; besides, it is more work than the spraying plan.

In cases of robbing I have broken them up almost instantaneously by the use of the same application. I generally place some straw or grass over the entrances and thoroughly spray the same; also the sides of the hive. This completely changes the odor, and has had the effect of baffling the robbers.

WHEELING, W. Va.,

Feb. 20, 1892.



Comments on a Beginner's Day Book.

No. 9.

E. E. HASTY.

CEE that your bees are well fed up for winter, and then let them alone," would be about the regulation advice for September. With me, however, September is the month for bees to finish raking in their surplus, and October the time for me to harvest it. More and more, as time passes, and I get myself emancipated from arbitrary rules, I come to

leave my honey, both section and extracted, on the hives until the season closes. The honey is better for it. That section honey thus left will not look quite as well, and in a city market will not sell quite as well, is unfortunate, but if you sell mostly to customers, as I do, there need be little difficulty. Even city retailers, at least some of them, are capable of catching on to the fact that a section of honey whose cheek has such a super-angelic whiteness is too supernal to be kept in this world any great length of time. Tears will begin to run down its pearly cheek if you "ask it to stay." Please do not think of me as saying one single word against keeping honey out of the bees' way, when the harvest is so plentiful as to require it; but to those who are in lean locations, I do recommend to have plenty of super room, a strain of bees that shows no squeamishness about going above—and then to let the thing run right straight through to the end of the railroad.

"Sept. 1st, 1880. Fine and hot. Thermometer 70° 91° 77°. Run 3 lbs. 4 ozs. Loss by night 13 ozs. Getting sections, etc., ready."

This was within an ounce or two of being the heaviest run that came in during the year. It is getting common of late to joke about "location," as if that term were a mere subterfuge to avoid saying "don't know;" but we must not lose sight of the fact that the location where the harvest closes sharp and finally in June, or the first half of July, calls for very different tactics from the location in which the bulk of your surplus may come in in September.

"Sept. 4th. Fair day, some cloud. Thermometer 72° 85° 70°. Run 1 lb. 4 ozs. Loss 8 ozs. Taking off honey."

I suppose that in my inexperience the freedom with which the honey came in rather rattled me; and not knowing but it would keep on so for weeks, I thought I must get the filled sections out of the way. Had I practiced what I am now preaching and let it alone I presume it would have been just as well.

"Sept. 7th. Sent for queens from Foster, Hutchinson and Nellis."

Guess I was right in deciding that a live apiary should have a few new queens every year from abroad to prevent a stagnant and inbred condition of things. I have neglected it of late; but "don't do as I do, but do as I tell you." Better get the queens in the spring, however, even if it does cost a little more. These three names represent

my guess as to who was trying hardest to push up the quality of his strain of bees. You may guess whether I guessed right. I believe Nellis sent the prettiest bees, Foster the grandest looking queen, and Hutchinson a good second.

We have as yet much uncertainty and misinformation as to what is needed to build up and keep up a superior strain of bees; but the man who honestly tries to accomplish something is the man to encourage. The man whose method begins and ends with "Get an imported queen, and keep the black drones killed off," isn't the fellow—providing I am to be judge.

And how about those new races of bees that come hum-buzzing around so frequently—at ten dollars a buzz? As in the case of a worthless new strawberry or apple, the vendor can describe a new bee so that it seems as if there was none like it in all the earth, and without telling any absolute fibs, either. On general principles it is wiser not to buy unless one has plenty of cash to pay for experience. If you wish to exercise discrimination, and buy just once in a while, let me whisper in your ear a little secret. When a new bee is trumpeted, that builds 50, or 100, or 300 queen cells at a single batch, give the critter as wide a berth as you would an oriental plague. When the bee comes over that can hardly be coaxed to build more than four or five, and builds them extra well indented and large, take that one. If I am right the restriction of motherhood to one individual in a colony is one of the last and most precious of insect developments. This specially valuable development appears to be among the first to backslide and degenerate, when degeneracy comes on. In other words, the voluntary building of an extra number of queen cells, with an accompanying increase of the fertile worker nuisance, is a tolerably sure sign of a degenerate bee—an atavism—a slipping back toward the primeval condition when as many perfect females were produced as perfect males. I believe this rule of judgment also holds good in deciding between different strains of the same race, and between different families in the same apiary. Encourage the ones that build only a very few fine cells, if improvement is what you are after.

"Sept. 10th. Proof that workers sting drones. At 5-7, where slaughter is going on, I found a worker fastened by the sting to a drone. The spot penetrated was the front of the thorax near the head. On being taken up the worker pulled so hard as to tear out its viscera, as in stinging the hand.

What creatures we all are, to be sure! On seeing a pile of dead and dying drones we say the cruel females have stung them to death. On discovery that drones are usually killed without being stung, then it is never, never—"Workers never sting a drone." Same of queens stinging workers, and workers stinging queens. O for a little more of the celestial grace that enables people to pronounce the difficult word "sometimes."

Sept. 11th. Experiment at feeding to get partly finished sections completed. Placing some such over the colony 1-4 I set 3 or 4 pounds of honey, mostly uncapped, outside the entrance. The sun was perhaps 3-4 of an hour high, but the bees were not flying, except a few coming home. Very quickly they began to take wing and to rob the weak colony that stood beside them. They made such a stir that other bees were aroused and adjacent hives had to be covered up."

I believe I modified my style of feeding to make it quieter and safer, and continued to feed for several days. All the honey I fed them they either wasted or stored below, and I soon discontinued the experiment as a failure. This part of my experimental education is still defective. Quite possibly I might have succeeded had I kept trying; but of late I have been so happy as to have but few uncapped sections at the close of the season. It's nice to succeed in overcoming a difficulty—but nicer yet not to have the difficulty to overcome. Feeding just outside the entrance seems to be almost always a failure with me. The little Yankees want to "annex" the plunder instead of carrying it off, and will frequently move but little of it; and a smoker battle is required to make them go back into the hive where they belong.

I think this was the first I knew this strong colony had been robbing its weak neighbor. When bees loaded with honey begin to come in many of the outgoing ones entirely ignore their eyesight in favor of a mental conclusion that a successful attack must have been made at the place where they knew some pilfering had been going on. It is curious to observe so high a degree of mental power joined with so flagrant a lack of common observation. Bees are always doing this—rushing where they got honey last, and neglecting the obvious present supply. This trait can be turned to good account. It is a good plan to establish at some conspicuous stand a Robbers' Exchange, to wit, an empty hive with a very small entrance, in which a little waste honey is put from time to time. Then if any mischief is going on anywhere it will be made

known to you by the crowd of would-be robbers bobbing around the Exchange; but if the Exchange is quiet you may feel comfortably assured that honesty prevails throughout the yard.

"Sept. 22nd. Frost. Began taking away the sections for the season. At 11-9 the bees had already carried down the unsealed honey."

And thus the season is over at last—or rather the last weighable ounce came in the next day, Sept. 23rd. And these bees were rather unusually prompt in getting about their winter preparations.

"Sept. 26th. Bloom now pretty much confined to the aster."

I hardly know whether to be pleased or displeased with this too-subsequent trait of the asters. It's nice to have some bloom always outspread whenever bees can fly; but another result is that we never, or scarcely ever, get any surplus honey from asters.

"Sept. 27th. Contracted the entrances to two inches. Put up part of the shelter boards over the entrances. I was moved to these measures by seeing that part of the colonies had got the habit of morning sneak thievery while others were torpid with cold."

Here's bee nature again very prominent. When cold nights come soon after a run of honey the comb close to the entrance has unsealed honey in it; and at dawn either no bees cover this honey or they are too torpid to resist. Certain colonies in the apiary are pretty sure to "go in" on this state of things. As among men so among bees, the Judases can hold out against drowsiness and cold when the Peters and Johns can not.

RICHARDS, Lucas Co., Ohio, Aug. 26, 1892.

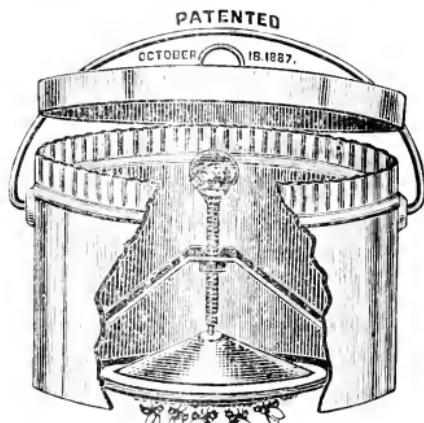


Advantages of the Hastings Perfection Feeder, and how Spring Feeding has Paid its Inventor.

M. E. HASTINGS.

IN my own experience of five years the Perfection feeder has given me entire satisfaction as an every-purpose feeder. The advantages claimed for it are: First, for stimulating it is perfection itself, as the flow can be regulated to any desired amount. That is something I practice every spring in building up for the honey flow, and it has paid me well. Last year I had twenty-eight colonies, spring count, and they averaged ninety pounds to the colony; this year I have not figured up the average yet, but I believe it will not be less than seventy or

seventy-five, average per colony, and this season has been a very poor one with bee-keepers about me. I believe the credit of my success belongs to spring feeding.



HASTING'S PERFECTION FEEDER.

Second, it can be used when the thermometer is below zero, as the feed is right over the cluster. In 1890 I fed my bees in December when the thermometer registered below zero, and fed them up for the winter.

Third, there is no danger of robbers troubling, as there is no dripping, and it can be refilled without any loss or daubing of the bees or hive; in fact it is, with me, one of the articles that would be indispensable in the apiary.

NEW YORK MILLS, N. Y., Aug. 26, 1892.



The Value of Young, Vigorous Queens.— A Poor Season in Colorado.

R. C. AIKIN.



DOOLITTLE says that to have colonies build up evenly and make an even record in honey gathering, more depends upon the queen than anything else. I do delight in having rousing colonies during the honey

flow, for that's where the profit comes in. How provoking to strive to get a queen to

lay freely, and in spite of all efforts see the colony "grow smaller by degrees and beautifully less." More queens fail just when we want them to do their best, and when 'tis the hardest to buy or raise them, than during all the rest of the year.

I sometimes borrow (steal) from the stronger and give to the weaker. To do so may pay in raising extracted honey, but I have doubts about it in raising comb honey. No queen can get her colony too strong for the summer (June and July) flow. I believe it pays to take brood from the weak and give to the strong, and run for surplus those colonies only that are so strong that contraction is unnecessary to get them into the supers. This is not intended as an argument against contraction, but it is better to have all colonies build up nearly alike.

My experience says Doolittle is correct about the value of good queens. In the season of 1890 I handled stock that had been re-queened only as the bees re-queened themselves when aged queens failed. It was a good season. The yield varied from 25 lbs. to 252 lbs. per colony. The "25-pounders" had failing queens. That year I re-queened most of the stock.

The season of 1891 I handled the same stock. I did not borrow half so much brood to help the weaker as I did the previous season, and despite the fact of a poorer season the yield per colony ranged from about 50 to 150 pounds. I don't know how the stock averaged in honey this year, but the bees wintered with no loss, except of the 300 colonies six or seven came out queenless. The proprietor told me, however, that he doubled down to 204 and got 10,000 or 12,000 pounds of honey.

This year we have altogether different stock. It is a combination of two apiaries. One was run heretofore on the "swarm as much as you please" plan and never an old queen superseded except as the bees did it. Twelve or fifteen per cent. of the queens failed, and some colonies never reached the capacity of a ten-frame Simplicity until the present month (Aug.) and gave not a pound of surplus, while the best colonies gave 60 or 70 pounds each. The other lot had been better cared for, but for two or three seasons had had a large per cent. of old queens. Many swarms had been purchased last year at swarming time. Of course, many of these had old queens. Of this stock, I think fully 25 per cent. failed, and many that did

pull through have not to day (Aug. 24) gathered enough for winter, while some colonies that undoubtedly had queens of last year's rearing gave nearly 100 pounds. Had all the queens been young and vigorous, I feel sure we should have at least one-third more honey.

I would rather destroy a colony now, taking all the stores, than to try to winter it and get a crop next year, if it had a feeble, old queen. *Let beginners mark well these points and not forget them.*

Our crop this year is short. Colorado will not compete much with you this season, Bro. H., unless we get a late flow which is not probable. It's going to work against us in our exhibit at Chicago. The far-famed alfalfa did not "give down" in our locality this year. We got some red clover honey and very little else. To date we have not half a crop. However, we will hold our "honey day" just the same, the 28th and 29th of Sep., at Longmont, in Boulder Co., about two hours ride from Denver.

I wish Sam Wilson would tell us why alfalfa does not "give down." Guess the main reason is that the farmers cut it too soon. If any one doubts this, come and see.

LOVELAND, Colo.

Aug. 21, 1892.



Sealed Stores Best for Spring Feeding.—

How They May be Secured.—The

Miller Feeder.

C. C. MILLER.



I AM not ready to say whether it is better to use eight-frame hives or something larger, but I am ready to stand up and say that I don't believe a hive no larger than one holding eight frames can be profitably used without feeding.

At any rate, in a locality like mine. Generally, there is nothing to speak of in the way of a harvest after white clover. At the close of the clover harvest the hive contains so much brood there is not room enough to

hold stores necessary to last till the following May or June.

Just now the bees seem to be doing a good business on buckwheat—by the way this is the first time they have done a good business on anything this year—and it is just possible that the present year may be an exception. It is so many years since they have done anything on buckwheat that I don't know how eight-frame hives may work with a fall flow. It is just possible that the brood may be somewhat crowded out and enough honey stored in the brood combs to last through. Even if enough is not stored, it may be a question whether it is better to feed sugar or fall honey.

At any rate, if the buckwheat and cucumber flow continues, I'll tell you what I am going to try. As fast as the hive is filled up, I'll take out one or more frames containing little or no brood, mass these frames in second stories over a few hives having excluders between the first and second stories, where the ripening and sealing can be finished. Then when the season closes, if there is not enough honey in the hives I can take out light frames and put in heavy ones. That may and it may not be cheaper than to feed sugar. And in any case, I think I'll try to have some of these combs saved over for spring use.

That reminds me of something that you haven't mentioned. You favor having enough in the combs so that no feeding shall be necessary in the winter or spring, and I infer that you would give combs ready filled in if needed, in the spring. I think you are right. Bees don't take kindly to a feeder in the spring, and will be days in emptying a feeder that in the fall they would take in a single night. Now suppose you haven't anything but clover. In that case you'll feed sugar syrup for fall, but you cannot get all the colonies to store enough to last till after the next fruit bloom. They don't seem to have room for it. In the spring it is so much better to have combs already filled to put in that I agree with you that I don't want to use a feeder in the spring. Yet generally I have had to put on feeders in spring. Now the point I'm coming at. In years when there is no fall crop and we must feed sugar syrup for winter, will it not be a good plan to do some extra feeding and have some combs filled with syrup ready for next spring? Just take combs away from some of the strongest

colonies, replacing with empty ones for them to fill again, storing the combs till the next spring.

One of the things that has been the hardest for me to learn, has been the large amount of stores that bees consume after they commence brood rearing in the spring. I don't know whether I have yet learned it, but I have learned that I want enough food in the hive so that the bees need never think of figuring about how long it will last. So it seems well always to have plenty of filled combs to put in wherever there is a vacancy in the spring.

As to the best feeder, you don't know the Miller feeder, do you? You say if some other feeder is better than the Heddon, the object of this discussion is to make that discovery. I cannot think you would have said that if you had ever tried a Miller feeder. I do not know of any advantage possessed by the Heddon not possessed by the Miller. The Miller holds a half more than the Heddon, enabling you to feed enough in a single night to last through. It costs a half less. It needs no special cover, but takes the regular flat cover that belongs to the hive. These are three important differences in favor of the Miller. If you know of three in favor of the Heddon, please tell us in the next REVIEW.

Perhaps if I should try it I should like your arrangement for heating feed better than my own. Without trying it, I don't see anything I like better except the gate at the bottom of the tank for drawing off the feed. I think that must be nicer than to dip out the feed as I do. For heating I have nothing but a common wash boiler on a kitchen stove, and I hardly see how anything else would be better.

To fill the feeders, I like a tin can with a spout, the can holding about ten pounds. Then I carry a pail full of feed along and measure it in the can.

MARENGO, Ill.,

Aug. 25, 1892.

[I believe, friend M., that the capacity of the Miller feeder is no greater than that of the Heddon. The latter is larger, but I think that the insertion of the thin boards for the bees to walk down on and take up the feed reduces its capacity to about the same as that of the Miller. The Miller costs less but it is necessary to use an upper story to make the arrangement complete. If one has plenty of empty upper stories not in use, which is often the case, this is not an

objectionable feature, otherwise I see no advantage in the way of cost. One advantage of the Heddon is that it furnishes more "standing room" for the bees when they are taking up the feed. The passage ways being at the sides in the Heddon is an advantage in "feeding back," as the sections are finished more rapidly at the place where the feed is being brought down. I discovered this when using the old style Heddon feeders in which the feed was taken down on one side only. The bees are inclined to finish up the center sections first. If the feed is brought down at each side it tends to bring about the completion of the sections all at one time.—ED.]



**The Successful Wintering of Bees Results
From the Proper Combination of
Different Conditions.**

J. H. LARRABEE.



HIBERNATION
H of bees is a question that was much discussed a few years ago in the bee journals. Some claimed that we could not winter bees without it and others argued that the theory of hibernation was

the result of a vivid imagination. If the word was taken to mean an absolutely torpid state and nothing less, as *death* cannot mean less than complete absence of life, then we know that bees cannot remain in this latter state more than a day or two and remain alive. However, I take it that hibernation, as a word much used, really means that torpor or languor that comes upon very many animals upon the approach of winter, and is only dissipated by the natural fulfillment of this demand of nature, just as we cannot live without sleep. Some have claimed that bees were not intended by the Creator to endure the winters of temperate climates, but are natives of warm countries, and that, therefore, we are abusing nature to attempt to winter bees, and must always expect loss. Now I believe that bees were as much intended to live in cold countries as the other myriads of hibernating insects.

Even in California, Cuba, or the hot climates about the Mediterranean and wherever bees are found, it is noticed that, at a certain season annually, they almost or quite cease brood rearing and readily enter that state of torpor provided by nature, called hibernation. The honey season in Cuba comes in February and March, so that special skill in management is needed to overcome the tendency to hibernation at this season, and induce the bees to breed for the harvest. Now the larger animals, being hardier, are able to hibernate under adverse conditions. The woodchuck, that winters so snugly in his nest underground, might perhaps winter in a snow bank, yet *all* animals that pass the winter in a state of quiet, must feel the injury from other than natural conditions. This principle of hibernation is found among all the orders of the animal kingdom, being very common among the insects, and less met with among the higher vertebrates. Now, since we find this hibernating instinct such a very common thing, and that among our bees it is simply an answer to the demands of nature, to the inexperienced it must seem like a very simple matter to supply them with proper conditions to winter them in health. But to those of most experience it is an ever difficult problem.

Mr. G. R. Pierce, of Blairstown, Iowa, recently issued a little book upon "The Winter Problem." It is very well written; most of the statements therein made seem to me to be scientifically accurate, and the general theory correct. The book is, however, remarkably narrow in its view of the causes of winter loss. For example, the claim is made that upward ventilation of the hive is very detrimental, and that the bees only live in spite of their abuse in this manner by their keeper. He also belittles the effect of honey dew and poor stores, which I think is wrong. The evident object of the book is to prove that the only true way to winter bees, whether in the cellar or out of doors, is to leave the covers well sealed down, and to protect upon the sides or top with double walls, paper, or chaff, etc. I am willing to grant that bees can be well wintered in this manner, but so they can as well in many other ways. His narrowness in this conclusion is to be attributed directly to the falsity of the premise. This is that whenever the cluster touches the side or top of the hive so much heat is conducted away through unprotected or porous walls, that disease or

starvation, from the inability of the cluster to change its position, is the result. The condensation of moisture about the cluster, causing molding and souring of combs and honey, are rightly considered as elements. But bees winter well when these conditions are violated and die when they are observed.

I will relate some of the circumstances under which I have found bees wintering well, to show how the most varied conditions do produce apparently equally good results, or dismal failures. My own bees are wintered out of doors in chaff hives. I have, however, sometimes been compelled to winter some colonies in the cellar. I have never lost bees extensively. During the winter of 1888-9 I lost about thirty-five colonies as the result of their gathering quantities of honey dew the previous fall. At my home apiary the past winter a loss is reported to me of three colonies out of 100, wintered in chaff hives with absorbing cushions, (or better), porous coverings. During the winter just spoken of, when I lost by the effects of honey dew, one of my neighbor bee-keepers who winters in a cellar that never before or since has failed, lost all but five of sixty colonies. This proves to me that it was the poor stores and not the method of wintering that killed the bees.

Among the mountains of eastern New York I once visited an apiary of box hives numbering thirty or forty colonies that were and had been for many years wintered on their summer stands without any protection whatever. They were in a gorge of the mountains where a breath of wind seldom penetrates, though the temperature goes very low.

At the residence of E. J. Cook, of Owosso, I saw some thirty colonies wintering in the house cellar in fine shape with simply a thick cloth, as a covering, to retain the heat of the hive and cluster. At Mr. Geo. E. Hilton's home I saw bees in chaff hives wintering well, and they were clustered close against the porous quilt next the chaff. At Mr. Martin's apiary at Hartford, New York, I saw bees being wintered in the cellar with a three-inch rim underneath the frames above the bottom board. Here the bees were clustered beneath the bottom bars of the frames and hanging nearly to the bottom of this rim. At the apiary of Mr. Fritts, near Niles, Mich., I saw chaff hives perched on stakes eighteen inches above the ground with large brick as overhead packing. Mr.

Fritts regarded snow as very injurious to the bees. On the other hand I have seen an apiary under fruit trees so buried in snow that only the topmost twigs of the trees were visible above the banks, and yet both these apiaries winter well, perhaps equally so.

At the college the bees have never wintered *perfectly* in the cellar under the *new* bee house, while the cellar under the old smaller building, in a different soil, always wintered them well. I have cited all these various methods and conditions under which bees are wintered to prove that no one thing can be responsible for all winter losses, and that the obtaining of any one favorable condition will not ensure their safe wintering. We become somewhat familiar with the peculiar conditions and demands of our several localities and know that if these conditions are right our bees will winter. But let some of them be wanting and the spring may prove that we really do not know how to winter bees, because we do not know how other than familiar circumstances will affect them. Another cellar, the absence of the usual fall honey flow, or the gathering of honey dew, might perhaps cause conditions that would prove fatal. There are so many extraneous and varying conditions that affect their wintering that we avoid one danger but to be confronted by another.

Many consider dysentery as one of the causes, or the principal cause, of loss. To me it is merely a symptom of disease, and thus it becomes an effect rather than a cause. The consumption of pollen may *cause* dysentery, but I am of the opinion that bees will not *consume* excessive amounts of pollen or become diseased from this consumption except when other more dangerous causes are at work. The pollen theory might seem true if we did not look deeper and find more reasonable explanations.

Let us next analyze separately some of these many influences and then perhaps we may be able to state some of the conditions of environment under which we may place our bees with tolerable assurance that they will winter safely.

Our first reason is lack of stores or starvation. Although this is not the principal cause of winter loss, still I have placed it first, for the reason that it is expected in all climates and under all conditions. The amount of stores needed by a colony of bees to carry them through a Michigan winter

varies greatly. They may winter well with a small amount, say ten pounds, and they may require very much more. My rule is to always give them an abundance, not less than twenty-five pounds, as the food is not wasted if a large amount is in store.

Another point to be considered in connection with stores is their quality. The effect of poor stores is not realized. Honey dew is often very injurious in its effects for the reason that we cannot avoid its presence, and it is frequently gathered in large quantities in the autumn with the other honey for winter stores. Some kinds will do no harm, while I have, on the other hand, known it to become granulated within two weeks after being gathered and before being sealed. This kind would be almost sure death to the colony wholly dependent upon it for its winter supply. The presence of such stuff may often be avoided by feeding heavily with honey or sugar syrup as soon as the bees begin to store it, so that no room will remain in the hive for it. Do not think that all kinds of honey dew are equally injurious. I should welcome that kind gathered during May, as it can do little harm for winter, being all consumed in brood-rearing.

Too late feeding will produce the same effect as poor stores, as the bees have not time to properly ripen and seal the feed, and it sours or runs out of the combs. I like to feed as soon as possible after the 15th of September.

The lack of bees of proper age is much debated, though I think very few if any practice any artificial method of securing these desired young bees. Nature or instinct is nearly always correct upon this point.

Now we have two general methods of wintering bees, out of doors in chaff or double-walled hives, and in the cellar in single-walled hives.

There are some obstacles to be met with when wintering out of doors that are not encountered in cellar wintering, such as long confinement, severe and long continued cold weather, dampness, and sometimes smothering by snow, etc. The first two of these depend upon the weather and are beyond man's control. Dampness of the interior of the hive, combs or absorbing cushions, is very detrimental to the health of the bees. Its effect is graphically described by Mr. Pierce in the book mentioned. Much care should be exercised to see that all covers are perfectly snow and rain tight.

Sometimes dampness thought to be caused by the bees comes from imperfect roofs. Green sawdust or partially dry forest leaves are sometimes used as a packing. This is a mistake, as the moisture does not dry from the packing so late in the fall, and the material becomes wetter than at first.

Those wintering bees in the cellar find they are met by still other conditions not present to those whose bees are out of doors. Some of these are long confinement, unevenness of temperature or too low temperature, dampness or impure air. The long confinement will not be injurious if other conditions are favorable. 40° to 48° is the generally acknowledged correct temperature: a lower for a dry air and a higher for a damp. Dampness of the floor or the presence of water in the cellar is not necessarily any indication of the amount of moisture in the air. A wet and dry bulb thermometer will alone indicate this. A use of this simple apparatus might often enable us to explain the cause of loss where now it is largely guesswork.

Impure air is one of the obscure causes of loss. The importance of pure air is little realized since there is no method of determining the amount of impurity in the air except by chemical analysis. The sense of smell is only a very erratic guide at best, as many of the most common and poisonous gases are without smell. A good rule is to give the cellar as much ventilation as possible and keep it at nearly the right temperature. Hives individually as well as the cellar often get too little change of air. A large entrance that it is not possible to clog with dead bees, or the insertion of a rim giving space below the frames, or the omission of the bottom board entirely, are all good methods of supplying each colony with air as pure as that of the cellar. These two causes, dampness and impure air, are responsible for very much of the loss of bees in cellars, where other colonies of the same apiary winter well, and all are treated alike.

I will not compare the two methods of wintering most in vogue, as it is not the object of this paper to advance any pet theory, but I will say that I believe that bees can be and are wintered very nearly in perfect health by either method. As to which is the least liable to failure you are surely the best judges, for the method most successful with you is surely the best. Different cellars and the methods of packing upon

the summer stands vary so greatly that it is ridiculous to presume to lay down any specific rules for bringing the bees to spring in a prosperous condition.

However, as I mentally review what I have written, the fancy comes to me to describe, before closing, as nearly as possible, the conditions and methods I would employ to secure perfect hibernation. First, I must see that each colony has thirty pounds or more of good, healthy honey or sugar syrup stored in the combs and well sealed. Then I desire a prolific young queen whose colony has reared a fair amount of young bees during September, which bees should be clustered compactly in a well formed brood nest. Now, if wintered in the cellar they should be placed therein about Nov. 10th to 20th. The cellar should be quite dry and by means of large ventilators or the porosity of the walls the air should be kept pure and sweet and uniformly at a temperature of about 45°.

If wintered on their summer stands they should be in chaff packed hives with good roofs that will exclude the rain and snow and admit air to keep the packing dry. Then I must *hope* for not too severe a winter but one admitting of several opportunities for flights.

But with all these conditions apparently complied with we *may* fail because of our imperfect knowledge or the errors of our judgment.

AGRIC. COLLEGE, Mich., May 11, 1892.



Feeding Bees Candy.—Making a Success of Out Door Feeding.

J. A. GREEN.



IF there is one thing more than another about bee keeping in which I feel that I have not made a profitable use as I might have of the knowledge I possessed, it is in the matter of feeding. I have always been

a full believer, theoretically, in the advantages to be derived from feeding, but somehow I have often neglected to put this belief

into practice as fully as I should have. When I had only forty or fifty colonies of bees I fed them whenever they needed it, and I found it profitable. But I got honey in those days. When the number of my colonies got up into the hundreds, and my time was more fully occupied, while the increased expenditures and poor seasons kept my pocket-book light, feeding was more neglected, and done only when it was necessary. Some of my best customers, too, were so particular about the purity of the honey they bought and so searching in their inquiries as to whether I fed my bees anything, that I considered it worth something to be able to say honestly, and prove it if necessary, that I never fed my bees anything but honey and very little of that.

Some of the most satisfactory feeding I ever did was by the use of a candy made of equal parts of grape sugar and cane sugar with about ten per cent. of flour stirred in, this kind of candy not requiring any cooking. This was moulded into thin cakes and a cake kept constantly over the frames of each colony, tucked up warm. These bees built up finely and were in unusually good condition when the honey flow came. My hives are not adapted to such feeding now, and a fault which I have to find with the modern style of hive with its board cover fitting down close to the tops of the frames, is that it is not as well adapted to feeding in small quantities within the hive as the old style with cloth covering and a space above.

The large Heddon feeder as used on the new hive is by far the best for feeding large quantities of feed, as is needed in feeding for winter, but I have not found it so well adapted to feeding small colonies in the spring.

My favorite way of feeding in the spring has always been to feed out of doors. This has some very serious disadvantages, it is true, but it is so much less labor than other methods that this alone is almost enough to make me prefer it. It has always seemed to me, too, that feed fed in this way did the bees more good than when it was fed in the hives. Any kind of refuse honey is easily fed in this way. We have often been told that it was unsafe to feed honey at a time when bees are inclined to rob. You can do it with perfect safety at any time provided you take the precaution to thin it down sufficiently. If the bees work on it more vigorously than you like, just add a little

more water. For out-door feeding any kind of a tight trough with suitable floats, that the bees may not get drowned, will answer. The Heddon feeders are just the thing, though I generally use large atmospheric feeders holding ten gallons of feed.

These I make by taking a ten-gallon flour can, such as I use for storing extracted honey, set it on a hive bottom-board, place a grooved board or shallow trough feeder over it upside down, clamp the two together with wire loops and "spreaders," then invert the whole. It will surprise one who has never fed in this way to see how much feed the bees of a large apiary will carry away in a day. This thin feed which the bees carry in from outside the hive more nearly approaches the natural honey flow, and I think has a much more stimulative effect than what is fed them in the hive. Is it true that some colonies will get the lion's share and others little or nothing, but it is an easy matter to find out which are the lazy ones and stir them up, which may often be done by feeding a little warm honey in the hive, leading them to go out and look for more, or these few may be fed in the ordinary way.

I have been in the habit of saving the cappings from extracting for spring feeding. The best way to use them is to cover them with water and allow them to soak for several hours, then feed the sweetened water and allow the bees to work over the soaked cappings to get out what honey may remain.

At times when bees are inclined to rob, or when a few cross bees are continually following the apiarist about, a little very thin feed will keep these nuisances busy, to the great comfort of their keeper. By diluting it to the proper degree you can regulate the rapidity with which they will work on it to suit yourself, and if you choose you can make a little feed keep a great many bees busy for a long time.

A great drawback to out-door feeding is that cool weather, by keeping the bees from flying, stops the regular supply of feed at a time when it may be badly needed. A much worse feature is that an ordinary light rain will *not* keep the bees from flying after they have grown accustomed to being fed regularly, but they will visit the feeding place in great numbers, only to be chilled and drowned. On this account it would be well to have the feeding place under an open shed, as it is not so much the flying through the rain that wrecks them as the waiting around the feeding place.

By doing the feeding early in the morning I have found that the bees a mile away did not get any perceptible amount of the feed, though I have known other insects, and especially the large gray hornets, to come in considerable numbers.

Feeding for winter may be done out of doors, feeding until the best colonies have enough, then finishing with individual feeders. It is my *opinion*, on which however I have not experimented carefully enough to be certain, that feed given in this way is not nearly so apt to granulate in the combs.

Unless the feeding for winter is done very early, the feed should be nearly as thick as honey, and in all cases should be given as rapidly as possible.

DAYTON, ILL.,

Sept. 7, 1892.



Desirable Points in a Feeder.—Bees Do Swarm on the Revolving Stand.—The House-Apiary a Success.—Importance of Good Queens.

B. TAYLOR.



IN regard to special kinds of feeders, I confess that I have never used any except those of my own planning and construction, and am not prepared by experience to discuss the merits of others. A feeder should be convenient to fill and use, and so constructed that no bees except those in the hive to which it is attached, can gain access. This I regard as of first importance, as otherwise robbing is sure to be started, and then there is an end to all peace and comfort. I have tried feeders varying in capacity from three to sixteen pounds. They are all made on something of the same principle, viz., a tight box to hold the syrup or honey, an opening to give the bees access to the feed, a place to fill them when empty without removing them from the hive or disturbing the bees and a float to keep the bees from getting daubed or drowned.

I have twenty-five feeders that I have used several years, and they work well for spring

or stimulative feeding. They hold three pounds each and are so constructed that they can be used either on the top of the hive or at the entrance. They are 5x7 inches inside and four inches deep. They are made of one-half inch stuff, with a tin bottom. I think all the feeders should have tin for bottoms, as I find that wooden bottoms, made ever so tight when new, will, when soiled by dampness in continued use, push the joints apart and leak.

To hold the feed, part of my own have a tin box that is entirely separate from the wooden part, and I think this the best way. The wooden part is constructed as before, and the tin troughs set neatly inside, hence no care need be taken with the wooden parts of these to make the joints water tight.

Oyster cans with one side cut out make good pans for this kind of feeders, and cost nothing. My feeders of this style have an inside cover to prevent the bees from getting out when refilling the feeders.

When used at the entrance, one of the entrance blocks is removed and the feeder set in its place, and no bees can reach the feed except from the inside of the hive. With the other entrance block I can close the entrance entirely if I wish. With a teakettle of warm syrup I can fill fifty of these feeders in thirty minutes, and can use one-half ounce or three pounds at a time. I used these feeders on the twelve hives in my house-apriary last spring. In that case I cut a hole in the burlap that was on top of the hives, set the feeders over it, packed the sawdust level with the top of the feeders, thus keeping all warm and tight, and I could feed the twelve colonies in five minutes at any time of day, without seeing a bee or exciting robbers. I regard this as the neatest way to feed bees in the spring whether in the house or in the open air. The hives in the house-apriary were fed a few ounces each day, and they grew strong early and have made the only *finished* cases of white honey I have taken *this year*; as the surplus crop is a failure here again for the third year.

I believe that I am the only bee-keeper here who is not a little blue. Perhaps if my bread and butter were dependent on the results of bee-keeping, I might feel differently.

Having said this much about feed and feeders, I will say that my highest hopes for successful honey producing is not coupled

with any kind of feeders or feeding. I know that under certain circumstances feeding can be resorted to with profit, but I question the circumstances. I have noticed that the more we feed and force our bees by artificial means, the greater grow our troubles in wintering, springing and summering. Big colonies with hives so filled with natural stores that they need no tinkering in the spring except to see that they have good queens and are covered warmly on top, is the gospel that is to control the Forestville apriary in the future, and I am now, regardless of the surplus honey crop for this year, giving all my colonies full hives of two sections each, and I am pleased to find the fall flow of honey good enough to enable the bees to fill them solid full. At this date, August 30, the combs are well filled with brood, and next year I will try and give a big report.

Of the house-apriary I will only say that in this poor season it has given far more than average results. Just how much more it is too early to say. Three of the twelve hives swarmed. This was less swarming than in the out-hives. This would argue that the house operates to discourage swarming. I have had no trouble in handling the bees in the house. Indeed, I am surprised at the ease with which all manipulations may be performed. If I were commencing an apriary anew I would make it on the house plan, for with proper hives and a rightly constructed house the thing could be started cheaply and managed successfully with less work than any other way.

The revolving stand has been to me an interesting experiment. The poor honey year makes it necessary to work the stand another year before coming to final conclusions. This much is settled. Changing hives daily and mixing the bees will not prevent swarming, as four out of the six hives swarmed; a far greater percentage than in the house-apriary. The hives were very large, giving the queens unlimited room for brood. The surplus room was abundant and the honey season poor, so that no one of the six colonies has finished an entire case of sections.

I found no trouble in returning the swarms by leaving the bees in the catchers over night and returning them next day. The same was true of the house-apriary. When I constructed the revolving stand I felt quite sure in my own mind of one thing at least,

and that was that it would equalize the bees, and make each hive equally strong. But this reasonable theory did not prove true. The strong colonies at the start *remained strong*; all the bees staying at their old place without regard to the hive that was made to occupy their stand, and I had to equalize them by swapping combs of brood for empty ones. This year's experiments have shown me clearer than ever the important part a good queen plays in a hive. The colonies in both the revolving stand and the house had last year's queens. All were fed so that supplies were not a question, as all had plenty, yet brood raising was very unequal. I shall pay more attention to this important question hereafter. I will say in closing this article that nothing could be worse for bee-keepers than the three years' failures that we have had *excepting* three big honey crops. If we had secured big crops every year the price of honey would have been so low as not to pay expenses.

FORESTVILLE, MINN., Aug. 3, 1892.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

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FLINT, MICHIGAN. SEP. 10, 1892.

DR. MILLER, in the *A. B. J.* of August 11, says: "At present most of my hives are overhauled about once a week." What for, Doctor?

THE WINTERING OF BEES has seldom been treated in a more masterly manner than Mr. Larrabee has handled it in this number of the REVIEW. To my mind, it is the best article on the subject that I ever read.

ARE FERTILE WORKERS ever developed in a hive that has not had queen cells cut out or otherwise destroyed? This query is asked by H. Fitz Hart, of Avery, La. About the only place that I have ever found them is in a nucleus where I have introduced virgin queens to be fertilized and the queens were lost and the nucleus left standing queenless with no material from which to rear a queen.

HOW MANY QUEENS did you raise this year? Let each breeder write me an answer to this question, and in the next issue I will publish a list of the breeders together with the number of queens each has reared.

MRS. JENNIE ATCHLEY is conducting a Southern Department in both the *A. B. J.* and the *Progressive Bee-keeper*. She has had experience in the right direction and knows how to tell it in an interesting manner.

GLEANINGS and the *A. B. J.* have my warmest thanks for the appreciative notices given the REVIEW in late issues. The "Extracted Department" of the REVIEW shows more clearly than anything else the esteem in which these journals are held in this office.

A DISPLAY of bees and honey that the editor of the REVIEW prepared and exhibited at the Detroit Exposition and at the State Fair, absorbed so much of his time that this issue is a little late. More about the fairs in next REVIEW.

THE TWINS, (Nora and Cora), will be fourteen in November. During the summer vacation they have helped me considerably in setting up the type for the REVIEW. They take great pains with their composition and, for beginners, furnish remarkably clean proofs

HASTY'S PICTURE. Why don't you give it? This question is often asked me. All gentle means have failed to secure his photo, and the consent to use it. Hasty is a little coy in this respect. While the REVIEW is not lacking in enterprise, it respects the feelings of the man who, for reasons best known to himself, prefers not to face the camera.

PROF. COOK has sent me proofs of matter that is to appear in the *College Speculum*. He has been submitting for analysis, to Profs. Kedzie, Wiley and Scovell, samples of honey that were gathered very rapidly from basswood and clover, and they were pronounced adulterated with cane sugar. Samples of honey obtained from feeding sugar were pronounced adulterated but classed with genuine honey gathered rapidly from the flowers. The full text of the article will be given in the next REVIEW.

THE LARGEST HOUSE APIARY in the world is probably owned by H. P. Langdon, of East Constable, N. Y., who writes as follows: "Thanks to the REVIEW for helping me to build what is probably the largest house apiary in the world. It is 11x100 feet and capable of accommodating 200 colonies. I ran 100 in it this season and expect to move in the other 100 next spring. It is a perfect success." (Please give full particulars, friend L.—Ed.)

IN INTRODUCING QUEENS there seems to be no set rule that can be followed with absolute certainty of results. G. M. Doolittle writes to *Gleanings* an account of his failure with a plan that he regarded as infallible, that of confining the queen under a large cage against the surface of the comb until she begins laying. I have sometimes found a colony to which it seemed impossible to introduce a queen, and my practice has been that advised by the editor of *Gleanings* in his foot-notes to the Doolittle article, that of giving the obstreperous colony a queen cell. If that plan fails, allow the bees to build cells and re-queen themselves. It does not pay to waste queens on such colonies.

ANOTHER "tiny feather from the wings of love" has been "dropped into the sacred lap of motherhood" at the home of the REVIEW. It is one of the sweetest, nicest, little girls that we ever had. Ivy said:—

"Papa, are you going to put her in the REVIEW?"

"Yes, you write a notice, and I'll put it in."

"Oh, I couldn't do that."

"Well, let's see how you would start out if you *were* going to write one?"

"I would say 'The editor of the REVIEW has another bright, lively, little daughter, although she has not made very much noise yet.'"

That was as far as I could induce her to go, but it expresses the situation as well, perhaps, as would a whole page, with the exception that the baby has since redeemed herself in the way of noise-making.

E. F. QUIGLEY says that the way to secure the mating of queens with choice drones, when the apiary is not isolated, is to place the choice drones around the apiary in all

directions from one-fourth to one-half mile from the main apiary. He put some virgin Italian queens in a black apiary one-fourth mile away from his Italian apiary. Queens reared in the Italian apiary were all mated while nine out of ten taken to the black apiary were purely mated. He says that the reason why there is so much complaint about the young queens from "five-banded" queens not producing five-banded bees is that these young queens seldom mate with the drones in the home-apiary.

FUMIGATING COMB HONEY is something that I have never had to do, but it may sometimes become necessary. Doolittle writes *Gleanings* that the proper amount of sulphur to use is four ounces to every seventy-five cubic feet in the room. Put some ashes in the bottom of a kettle, then some coals, and after this the sulphur. Hurry out of the room, peep in the window, and as soon as the last fly on the window stops kicking, wait five minutes, then open the windows and allow the fumes to pass out.

"FOUL BROOD" is often the cry when brood has died from some other cause. Ernest Root has been describing some cases of dead brood that appeared in two or three colonies in their Shane yard. The cappings were perforated and sunken, and the dead larvae was of a coffee color, but two decisive symptoms of foul brood were lacking, viz.: ropiness and the "glue pot odor." In one case the queen died and a cell was given. When the new queen began to lay, her brood was healthy. The other cases of the disease, or whatever it was, finally disappeared of themselves. A bee-keeper a few miles from Medina reported similar experiences. Mr. Root thinks that this trouble, whatever it is, has often been mistaken for the real, virulent foul brood, and perhaps been cured (?) by the use of salt, carbolic acid or some such nostrum. That is, some such "medicine" was used, and, as the trouble disappeared, it was naturally supposed that foul brood had been cured.

THE CONSTRUCTION OF BEE CELLARS.

Several times during the last two years I have been asked to make this subject one of special discussion. In the discussion upon "Disturbance of Bees in Winter," "Tem-

perature," "Ventilation," "Moisture," "Buildings for the Apiary," etc., it would seem that nearly all the vital points on cellar construction had been touched upon. It is possible, however, that it may be profitable to go over the ground again in a general way, searching out and bringing together those points bearing upon the construction of wintering repositories.

We put bees in a cellar simply to protect them from a low temperature. Fortunately, the temperature of the earth below the frost line is a desirable one for the successful wintering of bees. The main consideration is to place the bees in such a situation that they may have the benefit of the earth's internal heat with no accompanying undesirable conditions. I presume that the majority of house-cellars would be desirable places in which to winter bees. If they lack anything I presume it is warmth. They are too far above ground and the walls not sufficiently non-conductive. Let no one make the mistake of supposing that thick or non-conductive walls will *create* heat. All they can do is to *retain* it; or rather cause it to pass away more slowly.

The heat in a cellar must have some source. It must come from the earth, the bees, or some stove or something of this sort. I believe above ground cellars for wintering bees have not, as a rule, been successful. All the heat they receive is what comes from the surface of the earth, while the large exposure to the cold outer air allows a rapid radiation of heat.

The place to build a bee cellar is below the earth's surface. The size, of course, depends upon the number of colonies to be wintered. I have been told that a small number of colonies in a cellar would winter better than a large number. If there is any truth in the assertion, I should suppose that it would come from a large number of colonies creating too much heat towards spring. I have seen several cellars with as many as 200 colonies in each, and the bees wintered well. Ernest Root told me that some Eastern bee-keeper, I think it was Elwood, wintered 1,000 colonies in one cellar. I should not hesitate to put 200 colonies in one cellar.

A gently sloping side hill is a very desirable location for a bee cellar. This allows the outer end of the cellar bottom to be level with surface, thus avoiding going up and down stairs and the construction of a drain.

Where there is a choice I should dig a cellar in sandy soil. It is easier to dig and does not hold water so long as clay does.

The cheapest way of digging the cellar is with a team, plow and scraper. By making the excavation large enough it can be scooped out to such an extent that but very little shoveling will be necessary.

Where stones can be readily secured they are undoubtedly the best material with which to make the walls. The only objection to wood is that it will eventually decay. At the old place at Rogersville my brother had a cellar built in a gently sloping, sandy hill-side. It was excavated in the manner I have advised, but its walls were made of logs exactly like a log house. There was a cellar under the house, dug in such stiff clay that by giving the walls a slant no other walls were necessary. The house burned late in the fall, when it was almost time to put the bees in winter quarters. Stones were scarce and we had neither the time nor money to get them—the cellar must be finished at once—while the logs could be gotten near by for the cutting and drawing. The cellar, inside, was 8x20 feet and 6 feet high. It was covered by laying heavy, oak rails across it, putting on a foot of straw and then shoveling and scraping earth over it to the depth of three feet. There is quite a ridge of earth over the center of the cellar, and most of the water runs off. In long continued wet weather the water drips through, and to make it complete a roof is really needed. It was built five years ago and the logs (nearly a foot in diameter) are still sound, but, of course, it is only a question of time when they will decay.

I would not cement the bottom of a cellar. There seems to be something desirable about the earth's capacity for absorbing gases. By the use of cement this is lost. If they would remain in place, I would have simply walls of earth with no covering.

J. H. Robertson, of Pewamo, Mich., has a cellar large enough for 200 colonies. It is about half under ground and half above. The walls are about three feet thick, made of sawdust held in place by board walls. There is sawdust overhead and a roof over all.

I suppose that really the best place for the bee cellar is under the honey-house and shop. The cellar wall furnishes the foundation for the building and the latter a cover for the former. In fact, I have often felt

that I should like to build a bee cellar, shop, honey-house and house-apiary all combined. Mr. Heddon has a two-story building over his bee cellar. The lower story is used as an extracting room and honey house, the upper story as a store-room. R. L. Taylor has a bee cellar, honey-house, shop and store-room similarly arranged.

I have had but little occasion to use artificial heat in bee cellars. I have always used an oil stove. If obliged to use one very much I should have a pipe arranged to carry off the gases. Some very good authorities say that when artificial heat is needed it is better to have an ante-room connected with the bee cellar, and to have the stove in this adjoining room. As I understand it, they would warm the air in the ante-room, then allow it to pass into the bee room. The special advantage to be derived from this arrangement is not clear in my mind.

What about arrangements for ventilation? This is a point that I take up with a feeling that I wish I knew more about it. It has been most thoroughly discussed in the REVIEW, and the weight of the testimony was that so far as furnishing pure air is concerned no special ventilating arrangement is needed, that ventilation has a bearing only as it influences temperature—and yet, somehow I am not satisfied with such a decision. Years ago, great things were expected from sub-earth ventilation, but nearly all, if not all, who provided their cellars with sub-earth ventilation, have abandoned it. In some cases it was thought to be an injury. I have never wintered bees more perfectly than in a clamp where they were buried under two feet of frozen earth. All these facts are stubborn things, and, if I were building a bee cellar I should not go to the expense of furnishing it with sub-earth ventilation, and yet—I wish I knew more about it.

All you who have bee cellars, and can add to what I have written, let's hear from you.

EXTRACTED.

Electric Swarm Notifiers.

Some one in the *C. B. J.* advises that each hive in the apiary be placed upon springs that may be adjusted on thumb screws. When a swarm issues the hive will be so lightened that it will rise and complete an electric "circuit" that will cause a bell to

ring and thus give notice that a swarm has issued. Bro. Hill, of the *Guide*, copies the article and then comments on it as follows:—

"The plan would do very well where only a few colonies are kept, but in large apiaries too much expense and trouble. A better way would be to remove all trees that the bees would be likely to cluster on when swarming and put up in their places several slender poles, on the top of which should be fastened a wire cage containing a few bees, or perhaps a bunch of dried mullein stalks tied up in the shape of a cluster of bees, would usually be sufficient to attract all swarms to light in the desired places. These cages or bunches of mullein should be suspended from the top of the poles by a spring in such a way that the additional weight of a swarm clustered thereon would connect the wires and sound the alarm. A half dozen poles could be so placed as to catch swarms that would be likely to issue from a large apiary, and it could be so arranged that the dollar battery could operate all the swarm-enticers. This would save all adjusting, because when once properly arranged in working trim they would all remain so throughout the season if the battery were kept in order. The alarm could be sounded at any place or any distance from the apiary necessary. The bees seem to prefer to cluster about fifteen to twenty feet high, and will usually avail themselves of a convenient place at this height in an open place, even if there are plenty of trees, but no trees should be allowed to stand very near an apiary on any condition, unless it be on the north side. The sun should have full sway east, south and west to produce the best results. Well trimmed grape vines or shade boards, small trees with thinned tops so the sun shines through them, are all the shade that should be tolerated in or around an apiary. There can be no objection to removing everything that would interfere with the cages of bees or bundles of mullein. The arrangement would be both cheap and practical and profitable when we consider the time that is often consumed in watching an apiary."

When we remember how successful Mr. O. R. Coe was in causing swarms to cluster on caged bees, there is little doubt that the plan proposed by Bro. Hill might be made a success.

How to Prevent the Warping of Covers.

I have had very little trouble from the warping of covers, but it is possible that in a hot climate there might be trouble from this source. E. J. Baird, of Florida, writes to *Gleanings* a plan for its prevention. He says:—

"With your permission I want to tell the readers of *Gleanings* a good thing in relation to the flat covers of the dovetailed hive. I have tried the hive this year, and can see

but one fault, viz.: the covers *will* warp. Now and then one will lay perfectly flat; but the most of them are "cantankerous," and I have to pile brick on diagonally opposite corners to make them robber-excluding. Well, if you are bothered the same way, when you order covers just ask friend Root to run them over a circular saw, cutting two-thirds of the way through the board, from the under side. Make three or four of the grooves, equal distances apart. When that cover is cleated it is flat to stay, and as strong as ever. One can even use the edge for a seat if he feels so disposed."

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The Punics (Tunisians) Prolific and Good Workers.

Bro. Alley complains because I said that I saw no good accounts of the Tunisians (or Punics as they have been called) except those coming from interested parties. He calls my attention to a favorable report appearing in *Gleanings* of Aug. 1, from Mr. I. N. Moore, of California. I would say in explanation that when that issue of *Gleanings* came to hand the "Extracted" department of the last REVIEW was already in print. I have no pet race of bees to boom, and if the Tunisians have any desirable qualities no one is more willing than myself that the fact shall be known. Here is what Mr. Moore says:—

"There has been so much said concerning the Punic bees, and the many good qualities claimed for them, I will give you my experience from last October up to date. I procured a Punic queen from Henry Alley about the first of October, and introduced her to a small colony—not over one quart of bees—and no honey. I fed them, and the queen began laying the third day after she was introduced. By the first day of December they were more than double in numbers, and had plenty of honey for the winter. By May 15th they were the strongest colony I had. I have taken from them fourteen frames of honey and brood for other hives, and divided them once, and now the old hive contains fifteen frames of brood and honey, 12x12, and the new colony is full of honey and brood, and in fine condition. My new colony of Punics has gathered as much honey as any of the old colonies of the native bees; and the old colony of Punics has gathered nearly twice the amount of honey of any of the other colonies. So far they have come up to all the good qualities claimed for them. They are quick and active, work early and late; they are working before the others are out, and after all others have quit. I am satisfied they are the coming bee; and if they are given a fair trial I think they will give perfect satisfaction. I am well pleased with mine, and hope other bee keepers will give them a trial."

I. N. MOORE.

LOS ANGELES, Cal., July 12."

Shall the Bee-Keepers' Union Become Aggressive as well as Defensive?

According to its present constitution the Bee-Keepers' Union can use its money and power only in defending its members when suffering from unreasonable prosecution. Several times it has been urged that its constitution be changed so that it might take the aggressive as well as the defensive, particularly in fighting the adulteration of honey. Mr. J. F. McIntyre, of California, now proposes that a new Union be formed simply for the purpose of fighting adulteration. He writes to *Gleanings* as follows:—

"I would urge all honest bee-keepers who meet in Washington next fall, to organize another bee-keepers' union for the express purpose of fighting the adulteration of honey. I believe such a union would soon have ten times the strength of our present one, because we are all interested in this matter, except a few dishonest ones, and we will soon make it interesting for them. I have known for several years that a large proportion of the extracted honey sold in eastern cities was adulterated. This is why our dark honey sells for nearly as much as white—it will stand more glucose; and this is why the price does not go up in a poor year. I am very glad to hear H. W. Wiley say, "There is no variation in genuine honey, which would make it similar to corn-starch glucose." And I sincerely hope he will not be obliged to take it back; for if that is true, we can easily trace the honey back to the adulterator, and then place a detective to watch until he gets proof that will convict the guilty parties, if the evidence of the chemist is not sufficient; but we must have a union to furnish funds, and a strict law against adulteration. If I go into a store here and ask for maple syrup, the storekeeper asks, "Which do you want—Vermont or Ohio?"

"What is the price?"

"Vermont is 25 cents per quart, and Ohio 35."

Now, what do you suppose makes the difference? Is it the soil, the kind of trees, or the law? We know it is the Ohio law, and take the 35-cent can every time. I say, give us laws that will increase the price of our honey, and a union to see that they are enforced. We do not make enough honey, even in California, to compete with adulterators, and enjoy the fun; and I cannot see how any honest man can be opposed to laws that would remove this competition.

J. F. MCINTYRE.

FILLMORE, Cal., July 26."

The editor of *Gleanings* comments as follows:

"Mr. McIntyre is on the right track, and his scheme should certainly receive hearty encouragement. Whether it would be best to organize a new union having new functions we cannot say. It occurs to us that it

might be more feasible to modify the constitution of the existing Bee-Keepers' Union so as to cover the objects above set forth. We have no doubt that every member of that organization would vote to have this change made, providing that General-manager Newman should sanction it. It may not be best, however, to interfere with or enlarge the scope of an organization that has already done great good by the precedents in law which it has established in the interest of the bee-keeper. While we do not believe that adulteration of our product has been carried on extensively, we cannot deny, in the face of some facts that have been brought to light, that it has been done to some extent, and we therefore need—yes, must have—an organization whose business it shall be to ferret out the adulterators and bring them to justice. Honey will probably be a little scarce this year, and the temptation to mix in glucose will be great. A union such as Mr. McIntyre outlines, with competent, conscientious officers, it seems to us ought to secure easily a membership of not less than 1,000. With annual fees of \$1.00 from each member, some telling and effective work could be done. Let's hear from you, brother bee-keepers."

In union there is strength. Creating two Unions where one can do the work is more like division than union. One man alone can do but little in fighting adulteration. A Bee-Keepers' Union, if large enough and rightly managed, can be made a terror to adulterators. There is no necessity for two Unions. One is better than more, but its constitution should be broadened so that its money and power can be used for *any purpose* that its managers think best.

There has been a great deal of wonder expressed as to why more bee-keepers do not join the present Union. The only wonder to me is that as many join it as have. The man who isolates his apiary, or surrounds it with trees or high fences, or keeps gentle strains of bees, or, if his bees are so located that they may give annoyance, handles them only at dusk when they are not gathering honey, the man who takes all these precautions, feels that there is small chance that he will need the assistance of any Union. As the Union is now managed, the men who put in the dollars derive little benefit unless they get into trouble; and, usually, if a man tries hard enough he can keep out of trouble. If he does get into trouble which it would have been impossible to avoid, he does not need assistance any more than the man whose honey crop is a failure.

Change the constitution of the present Union so that it can fight adulteration, and every bee-keeper can see at once that the

dollars that he puts in may be of *some* benefit to him. The adulteration of honey, if carried on to considerable extent, increases the amount of honey put on the market, thus having its influence upon the price, which touches every bee-keeper in a tender spot.

Since the foregoing was written, the A. B. J. has taken up this matter and General Manager Newman gives his views, from which I clip the following:

"In order to add this new feature to the National Bee-Keepers' Union, the constitution must be amended; and, perhaps, the best way will be to have ten members sign a request and send it to me, to have the proposed amendments submitted to vote. Then let the matter be fully discussed in all the bee periodicals, so that the members may vote understandingly, after mature deliberation.

If it is voted to add the new feature, then the Washington convention can formulate plans to make an aggressive war upon adulteration and adulterators.

The greatest difficulty to be encountered will be the diversity in the laws of the several states. A national law should be enacted by congress against adulteration, applicable alike to every state and territory. Then something may be accomplished—until then, I fear much of the labor will be in vain.

Another trouble is that the honey from different localities varies so much in consequence of the diverse soils and atmospheric conditions. On that account even the analysis of honey by chemists of national reputation is totally unreliable.

Another thing must be provided for—the new departure would require so much time and energy of the General Manager that a salary should be attached to the office. I have done the best I could for the love of the pursuit alone, but it is hardly probable that my successor would accept the office on that condition, with that additional feature attached, to prosecute all honey adulterators.

Such a union will require a young, energetic and persistent man, and he should be a good lawyer. None of "these essential qualities" will be found in the present General Manager, and therefore a new man will have to be elected to that important position.

Fraternally yours,
THOMAS G. NEWMAN,
General Manager.

CHICAGO, Ills., Aug. 29, 1892.

Certainly no one could do better as General Manager than Bro. Newman has done. If he feels that he would not be able to bear the burdens that the proposed change would bring to its chief executive officer, let the Union, as it ushers in a salaried successor, do something more than thank him for the labor of love that he has done in the past.

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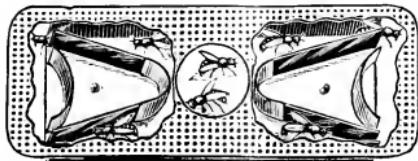
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Supplies.

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the
second

hand supplies that
I have been advertising
in the REVIEW, the
following remain unsold:—



100 old-style, Heddon surplus cases at 20 cts. (as a non-separatored case, they have no superior); 25 slatted honey boards at 10 cts.; 40 "dummies" for contracting the brood nest, 3 cts.; 20 Heddon feeders at 40 cts.; 25 Alley queen and drone traps at 25 cts. All these are practically as good as new.

I also have 2,000 new, four-piece, white poplar sections at \$4.00, and 200 white poplar, 12-lb shipping cases in the flat at 10 cts. They were made by Dr. Tinker, and cost me 11 cts. each, besides the freight. They are neat, and particularly adapted to exhibiting honey at fairs.

I would sell any of these articles for cash, or I would exchange them for extracted honey.

W. Z. HUTCHINSON, Flint, Michigan.

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Sale. To reduce the large stock of bee supplies that I have on hand, I will, until April 1st, 1893, sell them nearly $\frac{1}{3}$ cheaper than at former prices. Send for a description of my new feeder and the "red mark" prices and you will see how to save money. 8-92-6t **W. D. SOPER,**
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Please mention the Review.

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Write for prices on large quantities.

DEVOTED TO QUEEN REARING.

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Send for our 24-page Catalogue of Dovetailed Hives, Smokers, Extractors, etc.

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WILL FURNISH YOU THE

"BOSS" ONE-PIECE SECTION

AS CHEAP AS THE CHEAPEST

And the **BEST** in the Market.

Also **DOVETAILED HIVES**
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Write for Price List.

WATERTOWN, Wis., Jan. 1, 1892.

12-91-12

J. W. Taylor's strain of Italians

Beats the World

to gather honey. 224 pounds from one hive. Untested queens 75 cts. each; six for \$4.00; twelve for \$7.00. Tested, \$1.25; six for \$7.00.

Satisfaction and safe arrival by mail guaranteed.

4-92 6t J. W. TAYLOR, Ozan, Ark.

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We have New Steam Power, and New Buildings, and are now ready to furnish White Poplar Sections, Clamps, Crates and Wood Sides at short notice. Workmanship, Quality and Price unsurpassed. Send for sample and price list.

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1-90-tf

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For \$1.50 I will send the Review for 1892 and a fine, young, laying, Italian queen. Queen alone, 75 cts. For \$1.75 I will send the Review, the queen and "Advanced Bee Culture." Tested queens, \$1.00. The Review and a tested queen \$1.75. A discount on large orders. W. Z. Hutchinson, Flint, Mich.

REVIEW

Names of Bee-Keepers.

TYPE WRITTEN.

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically (in the largest States), and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.00 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly, in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. The former price was \$2.50 per 1000, but I now have a type writer, and, by using the manifold process, I can furnish them at \$2.00. W. Z. HUTCHINSON, Flint, Mich.

Only **\$5.00** will buy

One good, Simplicity, ten-frame hive with a good colony of Italian bees and a queen. \$4.00 will buy an eight-frame hive, bees and queen. L and Hoff. frames. Queens and nucleoli in season. JNO. A. THORNTON, Lima, Ill. 5-82 6t Please mention the Review.

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USUAL LOW PRICES.

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One Punic queen, one golden Carniolan queen, one Italian queen and the AMERICAN ARTICULATURIST one year for \$3.00. Three of either of the above queens mailed for \$3.00.

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One untested queen, .75
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 One tested queen, 1.50
 Three " queens, 4.00
 Very best, select, tested queen, 3.00
 Two-frame nucleus, with any queen, \$1.50 extra. Safe arrival guaranteed.

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In June, 90 cts each, or six for \$1.50, July and after, 75 cts each or six for \$4.00. Tested queens in June, \$1.50, or three for \$4.00, July and after, \$1.25 or three for \$3.50. Select, tested queens from \$2.00 to \$5.00 each.

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We make the best goods and sell them cheap. Our sections are far the best in the market.

Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

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1852.

REDUCTION ON THE PRICE OF

1891.

Langstroth on the Honey Bee.

(REVISED.)

PRICE BY MAIL, \$1.40: BY EXPRESS OR FREIGHT WITH OTHER GOODS \$1.25.

By its copious indexes, by its arrangement in numbered paragraphs, including reference numbers on any question in bee culture, any information can be instantly found. This book is the most complete treatise on bee keeping yet published. A FRENCH EDITION JUST ISSUED.

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Smokers, Honey Sections, Extractors, Tin Pails for Honey, Etc. Instructions to Beginner with Circulars Free. 4-92-12

Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

ESTABLISHED 1876.

S. T. FISH & CO.,

COMMISSION MERCHANTS.

Dried Fruit, Honey and Farm Products.

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OTTO J. E. URBAN,

3-92-1f Thorndale, Texas.

The Golden, Yellow, Italian

OCT. 10, 1892.



THE BEE-KEEPERS'
REVIEW
Published Monthly,

At Flint, Michigan.—One Dollar a Year.

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All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:—

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

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I will send the REVIEW with—		
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Honey Knives,

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Doctor Smoker,.....	3½ inch,.....	2.00
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Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

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1.90-tf.

Abronia, Michigan

Please mention the Review.



Western BEE-KEEPERS' Supply Factory.

Largest Business of the kind in the West.



4-92-tf Please mention the Review.

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Progressive • • •

• • • Bee-Keeper

It is a 16-page monthly at 50 cts. a year. Sample copy free. If you like beautiful, business bees, try

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To introduce the Progressive Bee-Keeper, I will send it one year and a beautiful queen for \$1.15. Regular price of queens, \$1.00; or six for \$5.00. Warranted purely mated and safe arrival and satisfaction guaranteed.

PROGRESSIVE BEE-KEEPER,
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Bee Hives and Section Boxes.

Simplicity, Langstroth-Simplicity, Standard Langstroth, Dovetailed and Champion Chaff Hives, Spacers, One Piece Sections and Shipping Cases, Foundation, Smokers, etc., etc. Send for 16-page Circular.

1-92-tf PAGE & KEITH, New London, Wis.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

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C. W. COSTELLOW, Waterboro, Me.

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Are not always the result of the same cause. They may come from starvation; from poor food; from improper preparations; from imperfect protection; from a cold, wet, or possibly a poorly ventilated cellar; etc., etc. Successful wintering comes from a proper combination of different conditions. For clear, concise, comprehensive conclusions upon these all-important points, consult "ADVANCED BEE CULTURE." Five of its thirty-two chapters treat as many different phases of the wintering problem.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

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On Their Own Merits!

Those who have had queens from me say my

5-Banded Golden Italians

Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. **None but the very best Queens sent out;** large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00, 6 for \$5.00. Special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.

CHAS. D. DUVAL,

Spencerville, Mont. Co., Md. 12-91-tf

Please mention the Review.

DON'T SEND

Across several States after Goods that can be bought just as cheaply near home, but write to

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Ottumwa, Iowa, for their large, 12-page, illustrated catalogue of everything needed in the apiculture Hives, Sections, Shipping Cases, Smokers, Foundation, Bees, Queens, Bee Veils, etc., etc., etc.

Please mention the Review.

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Bee Journal,

EDITED BY D. A. JONES.

Poultry Journal,

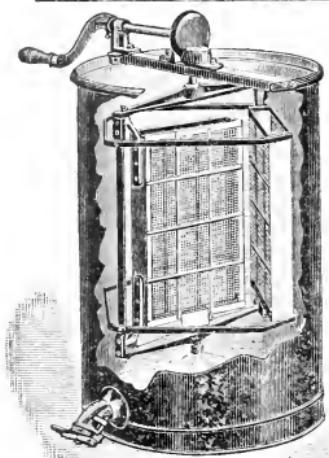
ED'D BY JNO. GRAY.

\$1.00 a Year.

\$1.00 a Year.

These are published separately, alternate weeks; edited by live, practical men and contributed to by the best writers. Both journals are interesting and alike valuable to expert or novice. Both illustrated and improved. Under new management, Address BEETON, ONT., Canada.

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A Grand Success.

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**New Cowan Reversible
HONEY EXTRACTOR.**

May be Reversed Without Stopping the Machine.

Strong, well made in every respect, light and of convenient size. The can is but little larger than that of the Novice. The gear is beveled and covered by an iron shield, and the crank out side the can. Frank McNay, of Mauston, Wis., a bee-keeper who produces tons and tons of extracted honey, says of it: —

"After carefully examining and trying the Cowan extractor, I have failed to find a weak part, and I do not hesitate to say that it is the best extractor made, both in regard to convenience and durability, and I shall replace all of my five machines with the Cowan as soon as possible."

It is endorsed also by J. F. McIntyre, an extensive extracted honey producer of California; by W. Z. Hutchinson, Dr. C. Miller, and others.

Price all Complete, Jappanned and Lettered, for L. Frame, \$10.

A. I. ROOT, Medina, O.

**The Oldest, Largest, Best and Only Weekly
Bee-Paper in America. Sample Copy Free.**

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The American Bee Journal

Address

GEORGE W. YORK & CO.,

199 Randolph St., - CHICAGO, ILLS.

To New Subscribers—From now to Jan. 1893, 20 cts., to Jan. 1894, \$1.00.

I can furnish Italian Queens until the middle of Nov. Untested 75 cts. Tested, \$1.00. The REVIEW one year and untested queen for \$1.50. For \$1.75 the REVIEW, the queen and "Advanced Bee Culture" will be sent.

W. Z. HUTCHINSON, Flint, Mich.

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Cents will buy a good, two-story, L-hive. Shall we send you one? Send a statement of what you want and we will give you prices. 1-92-12

Mazeppa, Minnesota.



Send for circular and testimonials, and read what others say of them.

PRICES: Each, by mail, with full instructions, 20 cts. Per doz., \$2.25. If, after three months' trial, they are not found superior to all other escapes, and satisfactory in every way, return them and we will refund your money. For sale by dealers.

4-92-4f Mention Review.

Porter's Spring Bee-Escape

Saves temper, time and bees.

PROF. COOK says: "No bee-keeper can afford to be without them."

WM. M'EVoy, foul brood inspector of Ont., Can., says: "They should be used in every bee yard in the whole wide world."

THOS. PIERCE, Pres. Eastern N. Y. B. K. A. says: "The time will soon come when all bee-keepers will use them."

R. & E. C. PORTER, Lewistown, Ill.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V. FLINT, MICHIGAN, OCT. 10, 1892. NO. 10.

The special topic of this issue is

The Construction of Bee Cellars.

That of the next issue will be

Raising Sugar - Honey.

**Build Bee Cellars Underground and of
Stone—Ventilation not Needed—Put
Sawdust on the Floor**

G. M. DOOLITTLE



SEEING THAT bee cellars is to be the topic of the next REVIEW I thought that the editor might allow me to say a few words regarding mine, as I think it is about the thing in which to winter bees.

My bee yard slopes

gently to the north (I wish it were south-east, but I had to take such as I had), while near the west end is a slight sag through which flowed a small brook in wet weather, but which was dry the larger part of the summer. This brook now has an underground passage, so as to be entirely out of the way. West of the brook is a knoll, or rise of ground, facing the east, and rising

at the rate of about four inches to the foot. Into this knoll I dug about thirty feet, or so that the back end of the hole was about ten feet deep, measuring straight up to the west bank. This same hole was about nine feet wide, and, for a trial, it was boarded up at first, a roof put over, and three feet of earth put on top of the roof. Herein I wintered my bees quite successfully, thus proving the value of such a place for wintering bees.

When the boards became rotten I tore all down and put in a good wall of stone and mortar, on top of which I put a good strong roof, which was covered with three feet of dry earth, and over the whole was a larger roof so as to keep the earth and all under it dry. Since then the "strong roof" rotted out and I now have the cellar covered with flag stone so that the whole is a permanent thing, and will last long after I am no more in this world.

The first cave or cellar did not have the outer roof, but was left the same as Brother Hutchinson says theirs was, consequently the dirt was kept wet by rains and snows. I find the latter much better as the dry earth seems to keep a more even temperature than did the former.

The east end wall is 24 feet from the west, and here is the entrance door, so that the cave is in reality only 24 feet long by 6 $\frac{1}{2}$ wide by 7 feet deep, inside measure. Two feet out from the entrance door is another door, and still two feet further out is another door, and in front of this last door is an ante-room four feet square, which has a door to that,

so I have to open four doors every time I go into the cellar. As these doors all fit nicely, I have three large dead air spaces through which the cold air must pass to get into the cellar and yet the first mentioned door is the coldest part of the cave or cellar, as is readily shown by the moisture collecting in drops upon it. After the bees are put in here, all is shut tight, and left so till spring after the bees are set out.

Before remodeling the cellar the last time I put in a sub-earth ventilator, one hundred feet long and some four or five feet deep, also a ventilator at the top, both of which could be controlled at pleasure. From much manipulation of these, through a term of years, I finally left them shut all the while, and as the bees did better with them shut, and, as the temperature could be better controlled with them shut, they were left out entirely in the last construction, and I now would not have them back again on any account. On no one point did I ever go with more caution or more "fear and trembling" than on this ventilation matter, so that no one need tell me that I jumped at conclusions regarding it. I am positive that a properly constructed, wholly underground bee cellar, needs no more ventilation than will naturally come through walls of mason work and the earth.

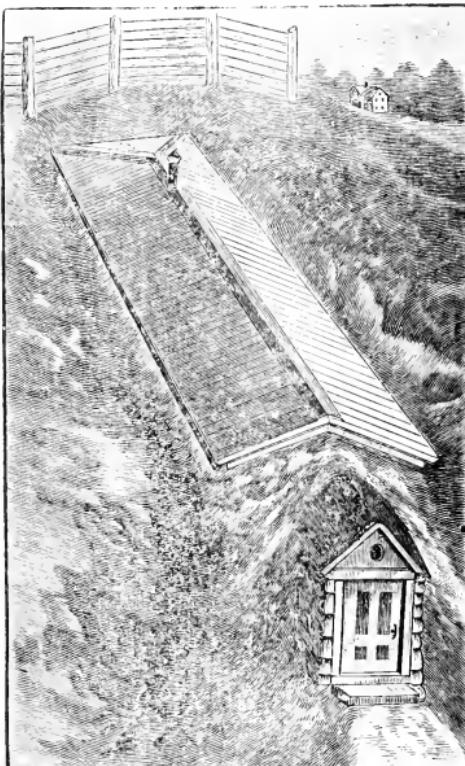
After the bees are set out in the spring the doors are fastened open and left so all summer, so that the heat shall dry all out as much as possible preparatory to another winter. By thus leaving it open during the cool and frosty nights of October, it so reduces the temperature of the cellar and ground around it that it stands at about 47° after the bees have become quiet. As winter proceeds it gradually lowers till it reaches 44° varying only from 43° to 45° no matter what the temperature is outside, whether 70° above zero for a week, or from 20° to 30° below zero for the same length of time. Herein is where such a cellar has the advantage over a cellar under a house, as Bro. H. so well brings out on page 244, and it makes no difference as to the temperature whether there is one colony or one hundred in this cellar. The whole is controlled by the temperature of the earth, or very nearly so.

Why I say "very nearly so" is, that to the west of the cellar, about one rod, is 30 feet of fence, feet high, which causes the snow to drift over the roof and cellar from three to eight feet deep, and this snow

has a little to do with the matter; but I have never known a lower degree than 41° to be reached in winters when we had no snow.

Unless a cellar would maintain an even temperature of from 41° to 47° I should prefer bees out of doors in chaff packed hives, and this temperature, too, whether bees were in it or not.

Where the bees are depended upon to keep up the temperature of the place they are in during very cold weather, it is very liable to



OUTSIDE VIEW OF BEE-CELLAR.

be too warm during a mild spell in late winter or early spring, which causes more trouble in cellar wintering than all else combined, as the bees will become uneasy and start brood-rearing at such times in spite of the opening of doors and windows at night, carrying in ice, etc., which can be done, besides when bees must "burn" honey to warm their hives and the room they are in, it causes a great loss of stores and vitality.

I see by the leader that Bro. H. would not have the floor of the bee cellar cemented. Neither would I; but there are bees dy-

ing of old age all the while, in any colony, and where many colonies are wintered in any cellar these old bees coming out on the cellar bottom to die, as they always do with the above temperature, make the bottom of the cellar very unpleasant to walk on besides the foul smell from decaying bees is very offensive to me, whether offensive to the bees or not. To overcome this I evenly scatter a two bushel bag of sawdust over the floor every month, which not only keeps down all offensive smell, and prevents crushing the dead bees on the floor but absorbs much of the moisture thrown off by the bees as well. Since using the sawdust as above I can say that I am perfectly satisfied with my cellar.

BORODINO, N. Y.,

Oct. 4, 1892.



**A Pointer for the Manufacturers of Smokers,
and a Hint Upon the Ventilation of
Cellars and Buildings.**

S. CORNEIL.



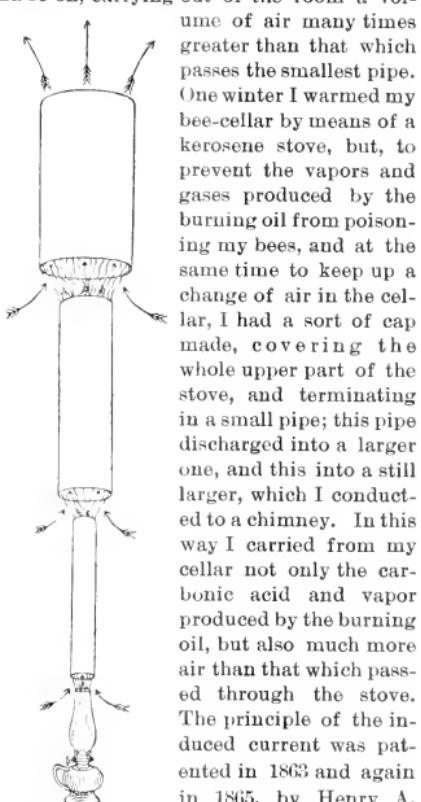
ONE of the most important matters in the construction of smokers appears to have been missed, both by the editor of the REVIEW and his contributors; I refer to the increase in the force of the blast which may be obtained by the induction of air

through several tubes before it enters the fire barrel. I shall try to explain.

If air is blown from the mouth through a tube, say three-eights of an inch in diameter, the volume discharged will be simply the quantity driven in by the mouth. But if the current enters another tube, open at both ends, say three-fourths of an inch in diameter, the distance between the ends of the tubes being so short that the *whole* current from the smaller tube passes into the larger one, the entire volume of air in the larger tube will be carried forward, and the supply will be kept up by outer air induced to rush in at the "cut off" between the ends of the tubes. In the same way the current from the second tube may enter a third tube still

larger, and so on. If the last tube terminates in a nozzle, like that of a smoker, the force of the blast will be multiplied nearly as many times as the air has passed through different tubes after the first one. This may be ascertained by directing the current against the wind wheel of an anemometer and comparing the result with that obtained when only one tube is used.

Apartments are often ventilated on this principle. The flame from a gas jet is turned into the lower end of a small pipe near the floor. The small pipe discharges into a larger one, and this into a still larger, and so on, carrying out of the room a volume of air many times greater than that which passes the smallest pipe.



One winter I warmed my bee-cellar by means of a kerosene stove, but, to prevent the vapors and gases produced by the burning oil from poisoning my bees, and at the same time to keep up a change of air in the cellar, I had a sort of cap made, covering the whole upper part of the stove, and terminating in a small pipe; this pipe discharged into a larger one, and this into a still larger, which I conducted to a chimney. In this way I carried from my cellar not only the carbonic acid and vapor produced by the burning oil, but also much more air than that which passed through the stove. The principle of the induced current was patented in 1863 and again in 1865, by Henry A. Gouge.

His work on ventilation, published by Van Nastrand & Co., N. Y., illustrates and explains the whole matter.

Let us now see how this principle may be applied so as to increase the force of the blast in smokers. Recently the bellows of one of my smokers required repairs. Examination showed that it was better to make a new bellows, which I did, and when fastening on the old fire barrel and shield, of the

Bingham pattern, I availed myself to some extent of the induced current. In the shield there is a short tube, five-eighths of an inch in diameter, the lower end of which had been inserted in the hole in the old bellows. The hole in the new bellows is three-eighths of an inch. I raised the shield so as to make a "cut-off" of about a quarter of an inch between the bellows and the tube. There is another "cut off" between the upper end of the tube and the fire box. The hole for admitting air to the fire barrel is only about the same diameter as the tube. This construction is faulty because a part of the air current is wasted between the upper end of the tube and the fire box. Had I been at the tinsmith's I would have had an inch and one-eighth tube fastened in the fire barrel into which the smaller tube would discharge. To prevent fire and ashes from falling into the bellows I would have the large tube project into the fire box an inch or more. But even as it is I have the strongest blast I have ever used. The ordinary working of the bellows now starts the fire into a blaze, while before it would hardly give the requisite quantity of smoke. It may be said that such a very strong blast is unnecessary, but is a very good thing to have in reserve the power to deluge a vicious stock with smoke on short notice, and that at a considerable distance. If Mr. Bingham will study up the work above referred to, and appropriate what he may learn therefrom, he can place in the hands of bee-keepers a smoker as much better than his present Doctor as that smoker is superior to the original Quinby.

Of course to a slight extent the principle of the induced current attains in the Bingham, and other smokers of that kind. In passing the current of air through the "cut off" outside air is taken in with the current, if the hole in the fire barrel happens to be large enough. The only advantage Mr. Bingham claims for the "cut off," which he calls his invention, is that the bellows works easier and that any kind of fuel may be burned without blazing. But there is more; the blast is stronger on that account, and it may be made several times stronger by using tubes, as already described.

When the problem comes to be fully worked out perhaps the place of exit for the air in Mr. Crane's bellows may be the best, because there is nearly the whole length of the bellows in which to lay tubes before reaching the fire box. The only objection I

see to it is that the current of air has to turn at a right angle, and this weakens its force to some extent.

It would be interesting to know the difference in temperature between a "hot blast" and a "cold blast." This may be ascertained, at least approximately, by directing the currents against the bulb of a thermometer. It would also be interesting to know the difference in the force of the blast between a new Bingham and one of Mr. Crane's smokers, the capacity of the bellows in each case being the same. An arrangement could be made for employing the bellows of each in exactly the same time, and the force of the blast could be accurately ascertained by directing the currents against the fan of an anemometer. If these experiments were carefully made they would help to show the progress we are making, and we would have more definite ideas on these matters.

LINDSAY, Ont., Canada, Aug. 24, 1892.



Why Bee Cellars Need Ventilation.

C. C. MILLER.



IN READING over your leader in last REVIEW, I gave a nod of approval to everything until I came to the place where you say that if there is any truth in the statement that a cellar will keep a small number of colonies better than a large number it is because a large number of colonies create too much heat toward spring. In my house cellar I have wintered from eight to 200. The eight winter better than the 200, and the difference is not all "toward Spring." Did you ever spend a night in a small room crowded with people with all doors and windows shut? Were you uncomfortable because the room got too warm toward morning? Wasn't it rather because the air became foul from so many pairs of lungs? And isn't it the same thing in a bee cellar?

Let me quote from my record book. "Feb. 17, 1891.—Bees very uneasy—warm in cellar—

Has been up to 50° in house cellar a good part of the winter. Made fire in stove for first time. Fire wouldn't go—chimney stopped up. Cleaned out chimney, and raised thermometer lying on hive nearest stove to 73°. Next morning bees quieter. After that cellar kept cooler—I think because the chimney is open."

Now if the trouble was that so many colonies made too much heat, the matter wouldn't be helped by putting in fire. The real trouble was that so many bees used up the oxygen, and there was nothing to change the air. The fire didn't do any good because it made the bees warmer or colder but because it helped change the air. The air out of doors had gone up to about the same temperature as in the cellar, hence no change, and to make matters worse the chimney was stopped up. Raising the air to 73° made the colder outside air rush in to take the place of the warmer air in the cellar. If the air in the cellar had been lowered to 30°, the final result would have been much the same. Anything rather than to have the air alike within and without.

For years I have been in the habit of leaving the cellar wide open all night long when the bees became uneasy. The bees roared longer than ever for some time after the cellar was opened, but next morning would be very quiet. For a long time I satisfied myself with the belief that the bees were quieter because the cellar had been cooled off, but one thing puzzled me very much. After the cellar had been open all night, if I went down toward noon I found all quiet, but on looking at the thermometer found the cellar as warm or warmer than the night before. Then I asked myself, "If the bees were noisy last night because too warm, why not noisy now when just as warm?" The answer was that it was not cooling off that quieted them, but purer air.

You're right about the advantage of a side hill so as to walk into the cellar on a level, and another important thing is to have a wide door. Five feet is none too wide. It's handy when carrying in or out.

I can see no advantage in having the stove in an ante-room. The only objection in having it in the same room with the bees that I can think of, is the light from the fire, although the stove door always stands open.

When it comes to your last paragraph, I am somewhat radical. If there's any one thing that I think I know about cellars, it is

that they need ventilation. If the cellar ventilates itself through cracks in the wall or otherwise, well and good, but ventilation in some way it must have. So far from believing "that ventilation has a bearing only as it influences temperature," I think that sometimes temperature has a bearing only as it influences ventilation. I have sub-ventilators, and although I may lose caste by saying so, I intend to keep them.

You ask me why I overhaul my hives about once a week. Between you and me, I don't think I would overhaul them quite as often as I do if I had my own way, but Miss Wilson is a very hard mistress to work for, and she is always so afraid that I will not get around in time enough that she keeps me crowded two or three days ahead. I've thought of striking sometimes, but I don't know where I could find another job. But the reason I want to go through every hive about once in ten days is because I don't know how to do better without having some one watch for swarms, and that would take twice as many hands. Possibly bee-hivers may solve the problem. Can you tell me any way to manage an out-apiary run for comb honey and have no one go near it oftener than once in ten days, without overhauling each colony so often?

I'm glad you have another nice baby. But you don't tell it's name. And I never knew that you had any children but the twins, until now you speak of Ivy. Are there any more?

MARENGO, Ill.,

Sept. 20, 1892.

[I did not know friend M. that you were speaking of an out-apiary: I supposed it was the home-yard. I should suppose swarming would be over by the first of August, but I presume you meant that you had been very recently overhauling the bees weekly.

I am glad to see you defend sub-earth ventilation even at risk of "losing caste." So many have not the courage to stand by their convictions. The REVIEW has always welcomed men who would defend even an unpopular truth.

Although Ivy is only twelve years old, while her twin sisters are fourteen, she is such a chubby little body that I have three dark eyed girls of about the same size; while baby "FERN" sees the soft gray of her eyes reflected in those of her mamma. That's all of 'em, Dr.—Ed.]

What is Honey?—Something in Defense of
Sugar Honey.

PROF. A. J. COOK.



IT IS NOT ALWAYS
I that our dictionaries are to be relied upon to tell us the truth. This is illustrated by our latest and so far as I know our best: *The Century*. In it honey is defined as "the sweet substance of flowers, gathered by the bees."

It takes but very little investigation to actually prove that this is an error. It seems to me that the best definition we can possibly give is this: Honey is digested nectar. Every one understands that honey is the liquid product of bees which they store in the cells of their comb. This substance has been known from time immemorial as honey. The merest child and the unlettered rustic as well as the scholar agree to this last statement. It is a truism too evident for contradiction, too generally recognized to require any argument.

The other definition: that honey is digested nectar is just as true though not as evident to the unlearned. The definition offends the tastes and sensitive notions of many good people and especially bee keepers who dread to see any, even an imaginary stigma cast upon their pets or the product of the apiary. Let me urge that any such statement, if truth, need disquiet no one. We all should desire the truth. Should willingly dig for it, scatter it when found, and defend it at all hazards, especially so if we have to do with nature's secrets, for these are God's own truths. But why should any one be offended at this definition? We all know that honey is carried in the honey stomach and emptied from it into the cells of the comb. I think it must come from a wrong notion of digestion. Digestion is simply changing our food so that it can be absorbed. It may be simply liquification; though many substances like blood, albumen, the albuminous material of milk and cane sugar may be in solution or in a liquid state and yet must be changed—digested—before absorption can take place. These substances can not pass rapidly, possibly not at

all, from the stomach through to the blood, except that they are digested. Digestion makes them no less clean, no less wholesome, no less nutritious. It simply makes them available, practically useful. Held in the stomach, and they would be heavy indeed. Changed by the digestive ferments and they pass rapidly and easily into the blood, and hasten on to nourish the tissues. If we eat cane sugar, we have to digest it. If we eat honey it has already been digested. Therefore it may be true, as some physicians have argued, that honey is a safer food for those with weak and delicate stomachs than is our common cane sugar. We know that certain diseases like diabetes and Bright's disease are now more common than of old, and we also know that no revolution in food regimen has been so marked and startling as that from honey to cane sugar. We eat the latter *in extenso* and have to do what the bees did for our away back ancestors who ate few sweets other than honey. Thus no one need or should object to the assertion that honey is digested nectar. First because it is truth, and secondly because this very digestion is in every way wholesome and desirable.

The nectar from which honey comes is very various in its origin and doubtless quite varied in its nature. Bees get the nectar from flowers, from sap, from fungi, from fruit and from various insects. While bees get the most of their nectar from flowers they often get not a little from extra floral glands, as in case of the cotton, the cow and partridge peas. Maple and other sap, furnish not a little nectar, and so are far more culpable than our good friend Hasty for they gave the bees pure cane sugar years ago, while Hasty only suggested it in this last year of our Lord 1891. The sap from stubble often yields very abundant nectar as does such fungi as ergot, and the bees have no scruples against it, for they gather, digest, and store it and it is honey. The secretions from insects are treated in the same way. In some cases the resultant honey is dark, rank and unfit for table use, but in other cases it is delicious and could not be told by the chemist, or even by the connoisseur from even the best of honey from nectar of our best reputed blossoms. Now if only that is honey which is derived from the nectar of flowers, what shall we call all the other? Indeed the most of our honey is composite in make up and in origin. Very much of

that which is transformed flower-nectar is largely mixed with that of many different sources. Not infrequently the bees visit groceries, cane syrup factories and the maple bush, and thus appropriate cane sugar unmixed. It is impossible, if desirable, to secure any honey that we can insure entirely from flowers.

It follows from the above that any artificial admixture of glucose or other syrup with honey makes it a compound that is not honey. It is a mixture of honey and syrup and is in part a substance that has not been digested by the bees. It is an adulteration.

From the above, it would follow that honey secured by feeding any nectar is still honey. Is there any avoiding this conclusion? If we feed honey, no one would question the fact that the resultant product is honey. But the bees may have secured the nectar of this same honey from maple sap, from fruit, from the sorgham factory or elsewhere. It is nectar digested or transformed by the bees and so it is honey. It may be very undesirable honey, but still it is honey. Does the bee keeper regard the honey from honey dew as aught but honey? No, he writes to the dealer as follows: I have some honey from honey dew, which is dark, rank and poor. Can you use it? Mr. Mr. Muth, it may be, writes back I can use it for various kinds of manufacturing, and makes an offer. Mr. Muth in speaking of his business says: I purchase so much honey each year. Does he exclude that just referred to? I think not.

Suppose then that glucose or cane syrup is fed, I think we must pronounce the resultant product honey. It is digested nectar. But this does not say that it is good or even marketable honey. I am very certain that honey from commercial glucose would not be good. The bees do not like it, will refuse it if any other nectar is at command; will die if feed it exclusively and continuously. If mixed with honey it is easily detected by the chemist, and so any such adulteration can be detected, punished and so prevented. If fed to bees, I doubt if it could be made a success, and as all such production would be confined to bee keepers it would cease as it would not be to the honey producer's interest to create an unworthy product, and injure his own business. Such honey would be palpably unwholesome, and as I believe it could be detected, it would be possible to prevent its production, should this be neces-

sary. Honey then from feeding glucose, would be still honey, but it would be inferior, unwholesome, and so its production could be and should be prevented. As it could probably be detected, it could be prevented should such a course be necessary, which from the nature of the case is not probable.

Honey from feeding cane sugar is quite another thing. It is honey and so far as we yet know, indeed there is no reason to think otherwise, it is entirely wholesome. It is exactly like the honey from flowers except it lacks some of the aromatic flavoring substances which exist in very minute quantities. If fed slowly it would be well reduced by the bees, and I believe few would pronounce it even an inferior honey. Mr. Larrabee fed our bees twenty-three pounds of honey in one night last June. This was extracted the next day and my students—a large class—all pronounced it undoubtedly honey, and of excellent quality. A lady of my household—the best *Cook* I ever had—upon being told what it was said it had the real honey flavor unmistakably, but was mild and pleasant. It is interesting that the chemists analyzed this and classed it with samples of clover and bass wood honey of most superior quality.

Yet the honey was rapidly stored and would certainly have been more like most honey from flower nectar had it been stored in five days, instead of one.

If then, honey from this source is entirely wholesome, of which there can be no doubt, if it is so excellent that forty persons engaged in the study of honey pronounce it honey and excellent in quality, and if our best chemists class it with the best of honey from the choicest honey plants, does it not stand to reason that it can be, may be, and shall we say ought to be, a product with no tarnished fame or reputation? If upon further investigation, it proves to be insipid and inferior, then it will be for the interest of bee keepers, the only ones who can produce it, to see to it that no such article is produced and put into the market. If, as some of our best bee keepers believe, it is superior as a food for bees, may we not from parity of reason, conclude that it ranks high as a table commodity?

Mr. Larrabee finds that he can dilute extracted honey with 12 per cent of water, and feed it with a slight profit with foundation in the sections, and at a greater profit if he

use partially filled sections. He estimates the extracted honey at eight cents per pound and the comb at fourteen cents per pound. If the points made above are well taken, then the profit from feeding cane syrup, with granulated sugar at five cents per pound, would be considerably increased. I do not wonder that in these trying seasons Mr. Hasty's mind turned in this direction. Surely this is a matter that may well be discussed. Let us not cry knavery or fraud, from imagined dangers but candidly investigate the matter, and if this course does offer a right and justifiable means to increase our profits let us adopt it. If by experience or argument we can find any valid objection to it, then let it, with all adulteration, and with glucose honey be condemned, forbidden, and the practice of producing it wholly prevented.

AG'L. COL.,

Sept. 21, 1892.



**A Perfect Cellar for Wintering Bees—It is
Made of Stone, Pine Leaves, Lumber
and Sawdust**

B. TAYLOR.



I HAVE built and I used three wintering cellars for bees. The first one was constructed of logs, on exactly the plan of your first one, as mentioned in your leader in September REVIEW, with the exception of the roof which was of boards made water

proof. The floor overhead was of narrow boards with three inch space between them. The space between this slat-roof and the roof was filled nearly full of straw, and all the ventilation was through this three feet of straw. I used this cellar ten years. The hives and combs were always free from dampness and mold and the bees came out bright and clean. It was consumed by fire twelve years ago and I rebuilt it with pine boards and put on a shingle roof. The inside arrangement was on the same plan as the old one: a lath floor overhead and the space between it and the roof filled with three

feet of dry pine leaves. Pine leaves are far better than straw or chaff for this purpose as they will not absorb and retain moisture and offer less harbor for mice and rats as they contain nothing in the way of food. This structure I used six or eight years with good results, and if the boards had been well covered with gas tar on both sides and the studding had been treated in the same way before the boards were nailed on, I think it would have remained sound for fifteen or twenty years, perhaps more. But, as it was, it began to show signs of decay, and I resolved three years ago, to construct a new one out of lasting material.

Stone was used as the cheapest and best material for the exposed parts. I will explain that these houses mentioned were one-half below ground with the earth banked to the eaves and had three doors ten inches apart to keep out cold from that direction. The new cellar is built in a clay bank so steep that while the entrance at the front is on a level with the ground, the top of the wall for the 24-foot building is but six inches above the ground at the rear. The size is 16x24 feet and the wall is $7\frac{1}{2}$ feet high in the clear, 20 inches thick at the bottom for $4\frac{1}{2}$ feet high, then a jog of eight inches is made on the inside and the wall for the upper four feet is but 12 inches thick. The eight inch space in the top of wall is filled with pine leaves kept in place by laying 2x6 joists in mortar on top of jog and setting 2x4 studding even with inside wall then nailing shiplap boards on the studding. This prevents the entrance of frost through the top of the wall, and it has remained perfectly dry through the three years since it was built.

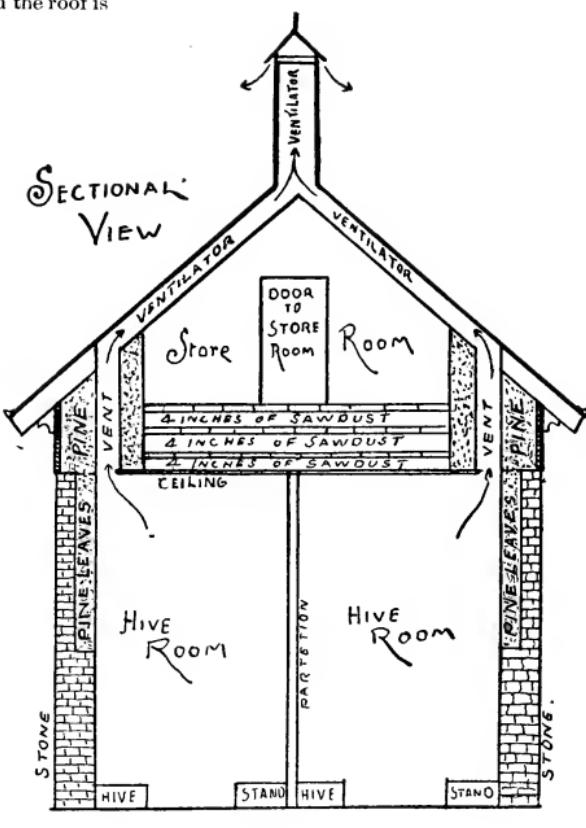
The floor over the cellar is made by first putting a set of 2x4 joists 16 inches apart, ceiling with 8-inch shiplap boards on the under side then filling to top of joists with sawdust, then laying a floor of matched boards on top, covering the floor with tarred paper, then putting on another set of joists directly over the first ones, and on top of the first floor of boards and paper, nailing them firmly, then filling even with their tops with sawdust as before. Over this is laid another floor of boards with paper on top. On this is laid the third set of joists and the space between them filled with sawdust, and a final floor of good matched flooring is put on top of all. This makes a floor 12 inches thick of alternate layers of boards paper and sawdust, and no frost has yet pen-

etrated it. This floor, however, is but ten feet wide, leaving a space of three feet on each side of the building.

The wooden side walls of the building, above the stone basement are four feet high and there is a set of studding at each edge of the floor, three feet from the outer side walls, that run up to the rafters of the building, and this space, 24 feet long and three feet wide and 4 feet deep is filled with pine leaves, making the side walls of the building, above the foundation, 3 feet thick, which cuts off all danger of frost. The walls are frame-sided with drop siding and the roof is of good shingles.

pose of keeping one-half of the bees undisturbed while the other side was opened either for putting the hives in in the fall or taking them out in the spring, and I find it a great help.

The hives are placed in two rows in each room, one row along the outer wall and one along each side of the central partition, and when properly filled will hold one hundred colonies in each room. The hives are set on



THE WINTERING CELLAR OF B. TAYLOR, FORESTVILLE, MINN.

The cellar is divided by cutting off three feet from the front entrance for an anteroom, leaving the actual room for bees 18 feet long and the room is divided lengthwise, by a board partition, into two equal rooms $6\frac{1}{2}$ feet wide, by 18 feet long. This dividing into two rooms was for the pur-

a proper stand 8 inches from the ground floor.

A ventilator opens into the back end of each room. They are 8 by 12 inches made of inch boards. The space between two rafters is tightly sealed with boards. At the top of the rafters a box 12 x 16 inches in size

and three feet high is fitted on top of the box with a suitable opening through the roof to communicate with the flue between the rafters, and the ventilating tubes from each room below are connected with the lower end of the enclosed space between the rafters, thus securing direct communication between each room and the outer air. There are slides to close the bottom of ventilators and the chutes from the cellar to the outer air are thoroughly coated with coal tar on the inside to prevent the ventilator from getting water soaked, as a great deal of moisture escapes from the bees.

There are no windows in the cellar proper, the openings being the doors through the partition of the ante-room into each room of the cellar. When these doors are closed it is entirely dark. There are two windows in the ante-room with window shutters to close on the inside.

The outer door is two inches thick and hinged on the inside.

There is a nice shed, 12x16 feet with shingle roof, over the front entrance. This shed is enclosed on the north side, and open on the east and south. This keeps the entrance to cellar from being drifted full of snow in the winter and makes a splendid place to sit and watch the yard in the warm days. The whole expense for the cellar was about \$300 and I am entirely satisfied with the investment. I commenced this cellar with the intention of making it as near perfect as my skill and knowledge would permit, and, after three winter's use, I see no reason to make the slightest alteration if I were going to build again.

A thermometer is kept in each apartment and they have stood at 42° for three months without changing 2°.

The clay floor keeps dusty all winter and I never saw a particle of moisture on the walls summer or winter.

And now friend Hutchinson, this hastily written sketch is my answer to your request for my experience and ideas on wintering cellars. My own is as near perfect as any that I have ever seen and a description of it is I think better than any speculative-theory.

I will return to say that the earth is banked up to near the top of the wall on all sides. The building is nicely painted, roof and all, and is worth all it cost.

FORESTVILLE, MINN.

Oct. 4, 1892.

Fall Feeding More Profitable Than Giving Combs of Honey.—How Bees May be Fed Even in Cold Weather.

M. E. HASTINGS.



WITH you, Mr. Editor, I believe that the best method of feeding for winter is to give frames of honey, but in running for comb honey there are not many swarms that have frames of honey to spare after the season is

over. It is necessary every fall for me to feed, as there are not enough fall flowers in this locality for bees to gather sufficient honey for winter.

I used to run several swarms entirely for honey in the frames to give to those that were short, but abandoned the idea some years since, for the reason that the amount realized for the comb honey from those same swarms, should they be put on frames, would leave a good balance to the credit in the difference in the price of comb honey and the sugar syrup fed back in the fall.

The question now at issue is what style of feeder and feeding is best to use for the desired result, that of having strong colonies ready to harvest the honey crop. The one that I have used for six or seven years is the "Perfection Feeder." For an all-purpose feeder it cannot be excelled. It can be used the year round, winter and summer. My bees were fed in December, 1891, and wintered O. K. Out of forty-five stocks the loss was only three. With any other feeder it could not very well have been done at that time, as the thermometer several times reached zero and below it. It can be used in zero weather or lower, in doors or out, as the syrup is directly over the cluster and the bees do not leave the hive to get it. The heat rising from the cluster against the cloth on the bottom of the feeder allows the honey to flow freely. If I want to feed up quickly I put on two or three feeders at a time and regulate the flow as fast as they can take it. It can be refilled without disturbing the bees or removing the feeder.

For spring feeding it is just the thing, and can be used as before stated during cool

weather, there being no possible danger from robbers as the honey is directly over the cluster and there is no scent outside of the hive to guide them.

For stimulating brood rearing it is perfection itself, as the flow can be regulated to any desired amount just enough to keep the queen laying until the principal harvest is ready. I have practiced stimulating for some years, and it has paid me well.

NEW YORK MILLS, N. Y., Sep. 10, 1892.



When and How Feeding may be Made Very Profitable.

R. L. TAYLOR.



I HAVE long been interested in the matter of feeding, and it is still a subject of growing interest to me. I have never fed bees in the spring except in cases of necessity, but the results of this necessary feeding has given me an increasing tendency in the direction I see

the editor is taking. In the leanest of the late lean years every colony that cast a swarm as soon as the first opening of the white clover has given me more than an average amount of surplus comb honey, and by that I mean more than an average in good seasons. Now it has come to be a fond dream of mine that all reasonably good colonies having good queens can be brought to the swarming point by that time. Unlike Dr. Miller I want my bees to swarm, and especially if I can get them to swarm before the tenth of June. With me such colonies surpass in amount of surplus those of equal strength that fail to cast swarms. Then surely the additional swarm is worth something, or at least one may destroy the bees and have their winter stores extra, besides with comparatively little trouble one may obtain a good supply of fine young queens, a point I believe too much neglected. All my experience shows that to feed pretty liberally during May and June, when there is dearth or bad weather, would be profit-

able, and that it would cause early swarming is shown by the fact that during fruit bloom many colonies are often found making preparations to swarm by the building of queen cells, which are torn down when the fruit bloom passes, and swarming is delayed a month or more. Food given in a feeder is as effective in the building up of a colony as is nectar gathered from the blossoms. Then, if fed at the proper season it can never be wasted, the bees never throw it out of doors. I said such feeding would be profitable,—it would be doubly profitable. Every one who has tried feeding during warm weather when little or no nectar is found outside, has noticed how it incites the bees to the search for pollen, and it may easily be seen that for every pound of syrup fed, an extra pound of pollen would be gathered, which I suppose would be equal in value as food to the syrup.

Now, with regard to feeding in the fall, of course all will agree that in case of necessity it must be resorted to if the bees have not sufficient stores for winter, but as I had occasion to say elsewhere, "I am using words critically when I say sufficient is not enough." Bees always do better when they have a superabundance. There will not be serious disagreement on this point, but on another I fear I may not be considered orthodox, and that is feeding in the fall to produce brood-rearing. I have never been able to accept the theory that late hatched bees do not winter well. One season, on account of very bad weather in August that was fast putting a stop to all brood rearing, I began to feed, and it seemed to work so well that I kept it up into October and with some colonies till the first of November, and brood rearing was kept up to a considerable extent while feeding lasted. The result was that they wintered excellently and were in perfect condition at the opening of spring, and the way they built up was a wonder. Such perfect combs of brood I never saw elsewhere at the same time of year.

Yes, I am in favor of feeding. It is indispensable if the bees lack a plenty of stores, and also I believe profitable and very satisfactory in September, May and June whenever there is little or no nectar to be gathered. Of the two I think September feeding is the more important on account of the inclination of the bees to cease brood rearing at that season, while in the spring if they have abundance of stores their natural desire to

keep up the rearing of brood will carry them through in fairly good condition.

The kind of feeder used I do not deem a matter of very great importance. For feeding for stores to a small extent in occasional years a tin milk pan with a cloth is good enough for me; if I had to feed much every year I should want the Heddon feeder. For brood rearing I prefer the Simplicity feeder covered with wire cloth through which the syrup is poured into the feeder. The top of the hive is packed closely about the feeder to confine the bees and the heat below. For feeding stores late in the season or to weak colonies this is the best feeder because the heat of the colony is better preserved, and by using warm syrup and feeding more frequently the bees will take it much more rapidly than they will from any large feeder.

LAPEER, Mich.,

July 10, 1892.



Comments on a Beginner's Day Book.

No. 10.

E. E. HASTY.

HIS is really the first article in the series, although nominally the tenth—only way I could devise to begin in January a series of monthly experiences which really began in October. So you are to forget for the present the previous nine articles, and think of the beginner as nine months more raw than when you met him last. If he keeps on at this rate he'll be green enough for a side-show before long, sure enough.

"October 4th, 1879. Bought of John P. Hasty the apiary containing 63 colonies of bees, together with this year's crop of honey, the fixtures and supplies on hand, a lot of thin lumber, a box of tin—everything pertaining to the apiary except the foot power saw."

This opening experience shows pretty distinctly that there are exceptions to almost all general rules. A very excellent general rule is, never buy an apairy; buy two or three colonies, and at one and the same time learn your rather abstruse trade, and create your apiary. But I bought an apiary because by so doing I could get immediately out of a very unpleasant financial trade. Had inherited some wild land that inherited no income. Special taxes were piled on, more than I could pay. A sale could not be forced except at a fearful sacrifice, property was so depressed. Under these circum-

sances a brother of mine offered to buy some of the land, at a plump brotherly price, if I would take the apiary off his hands as part payment. The cash payment proposed was enough to supply my needs. He had learned (a thing that perhaps some beginner reading these lines may need to learn) that he could not farm as he wished to farm and run an apairy properly too.

May I also call attention to the fact that those who sincerely commit the direction of their lives to the Lord find him at hand when he is needed—at hand with some providential opening leading out of difficulty, and into the place where he wants us to be. I devoutly wanted to be a preacher and teacher of religious truth. As for going at it in the regulation way, salaried and ordained something within me pleaded against it. Many have felt that deprecatory pleading I imagine; and I think it is from God's illuminating spirit. Religious professionalism seems to me to be suspicious, if not plainly wicked. Moreover I did not like to keep myself in the attitude of even silently holding out my hands for contributions, like a beggar. God met me half way in the matter by making a bee-keeper of me, *sans ceremonie*.

A general rule of piety which is in high repute is to spend much time in reflection and prayer over important steps which we have to take. I wished to follow the rule on this occasion: but the logic of events seemed to call for a speedy answer to the proposition and I gave it accordingly. The Christian experience of years has impressed me that the general rule has exceptions also. At least I remember a very unusual experience, with very important and far-reaching consequences in which I had to put some of the most blazing prayers a human soul could send up in the silent form, and limit myself to about one minute of time before saying what I could do about a momentous proposition. Rules are good things; but to know how to break rules properly is quite as important as to remember the rules.

"October 5th. Contracted the entrance to stop robbing."

The apairy previously to any purchase had been almost totally neglected for some time. Where swarming prevails as it does here a percentage of the colonies in the yard will turn up queenless late in the season, get weak, infested with fertile workers, and very

likely infested with larval bee moths also. A carnival of robbing out these new colonies had been held in my brother's apiary, and he was too busy farming to interfere. I interfered on one occasion I remember. A colony not far from my window at which I heard a rumpus every morning before I was up, I shut up tight. I knew it was not good for bees to be shut up; but I pitied this colony so—attacked at untimely hours so many days in succession and holding out against it notwithstanding the disadvantage of having no regular bottom board, that I fixed things and shut them in—surely be destroyed if I didn't, you know. Well, it turned out that they were not being robbed at all. They were simply a particularly enterprising nation of robbers, and the hot weather with the additional heat which they made by trying to get out melted the whole establishment down and drowned the pirates in their own stolen honey—a tolerably fair greenhorn's caper. After that you can imagine I let things alone; and robbing reached such a pitch that a good colony would be attacked; and the ground covered with dead before the assailants would haul off. This seemed to be very shocking at the time; but at present I do not regard it exactly in the same light. The bees that got killed trying to rob in the fall are not young enough to last for next spring work I reckon. It is better that they clean out everything that cannot make a royal fight than that all these odds and ends of unseaworthy colonies should try the stormy Atlantic of a hard winter just as they are without keeper's care or comrade's cribbage. But of course I was just right in promptly putting each surviving colony in shape to defend itself. And Apianus had better be the robber when robbing needs to be done.

"October 13th. Began taking up honey. Nearly stopped by robbers, and badly stung. Yard square of muslin tucked around the front of the hive a practicable way to stop robbing. Went through two hives and took 21 pounds. No brood seen."

Notice the greenness of the first sentence. It is the box-hive people that say taking *up* honey; while the professional apiarist says taking *off* honey. Don't try to harvest honey and close up for winter in hot October weather after autumn robbing has set in. With a little sagacity you can avoid such times as a well disciplined army of robbers will kick up. Watch out and begin afternoons just after flying ceases; and scrape

and weigh the honey in doors while bees are on the wing. The style of dealing with robbers here suggested is crude and capable of much improvement. You want a sheet large enough to go over the hive and rest on the ground all round. Then briskly turn it over every few minutes and soon the home bees will be inside and the robbers outside. By the way, the last brand-new method of stopping robbers seems very promising. I haven't tried it yet, but I think it would suffice in almost all cases. The novelty is merely in combination—combining the carbolic acid method with the grass method. The grass method alone often suffices—always probably when the colony inside has good fighting clothes on—but when the residents are weak, and in addition won't fight, sometimes extra-wicked robbers will dig down through the grass. But with the entrance board and front well sprayed with carbolic acid before the grass is propped in place probably this entrance would never be forced.

"October 15th. Hewed and framed stringers for storage loft."

I wanted a place to store supers, frames, wide frames, dummies, cushions, and the other multitudinous traps pertaining to the apiary. Not very far away was a big shed that never had its chamber floor put in. I had permission to use the loft if I would floor it, and did so. This move was a mistake. Although less than 200 feet from the corner of apiary it made me altogether to much travel and climbing. Had I bought a trifle more lumber, and built a couple of the simplest little board shanties close at hand it would have been better. By the way I believe in having a little bit of a building, complete in itself, for each purpose, instead of a large building, for all purposes. This will be thought a mere personal oddity; but it seems to me that as a point of tactics it will stand the fire of season and practice.

"October 20th. Went through four stands of bees. Omitted to tuck trousers legs into boots?"

How much a few simple words can convey of the heart of man to man!

"October 23rd. Went through four stands of bees in the morning and four in the afternoon. Put the chaff on several stands folded in a yard square of muslin. Think highly of the plan. Made my first sale of honey, two sections, 40 cents, and took the pay in tinware."

My mid-day tribulations, as you see, are already teaching me when to take the honey off. I still think that folded cushions are

better than sewed ones. It is best to have some permanent sewed cushions; but for the most part it is better to keep the chaff in a bin when not in use. Fill the cushions when you need them, and empty them when they are taken off. A three bushel basket is the proper go-between 'twixt the chaff bin and the hive. I invented and made two different utensils on purpose for this service, but the plain basket seems to hold the field.

"October 30. Experiment. Gave 12-7 a frame of three pounds of honey, outside the entrance at noon, and threw a muslin tent over the hive. Tent worked well. Only a few bees scolded a little because they could not get out. Evening, Bees had emptied the unsealed cells, and those I had uncapped, following accurately every stroke of the knife, but seemed to think it wrong to tear off caps."

It does seem as though bees were capable of the feelings, Ought, and Ought not. And it looks as though the moral gradations of saints and sinners were faintly visible in rudimentary form among them. A gang of bee sinners, to wit, robbers, would have gone through these caps quick enough. And it is very common to find bees with an over respect for the cappings on cells.

RICHARDS, OHIO. Sept. 27th, 1892.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

TERMS: — \$1.00 a year in advance. Two copies, \$1.90; three for \$2.70; five for \$4.00; ten, or more, 70 cents each. ~~The~~ The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, OCT. 10, 1892.

OIL STOVES, having no pipes, leave the gases of combustion in the room. Those who wish to use them in warming rooms or bee cellars ought to read Mr. Corneil's article in this number.

FIVE-BANDED BEES are really not so numerous as the advertising pages of the journals would seem to indicate. Jas. Wood, of North Prescott, Mass., has been sending to the different breeders of five-banded bees for samples of their bees, and not one bee has shown a particle of yellow below the fourth segment. He writes to *Gleanings* that he considers it a mistake to call them five-banded bees. I think that he is correct.

Of all the bright yellow bees that I have had I think there were only two colonies that were really five-banded. The queens came from L. L. Hearn.

*THE AMERICAN BEE JOURNAL, the "old reliable," the oldest bee journal in the country, shows no sign of decrepitude. It comes out with a brand new full-page illustration on its front page, and at the head of each department of the paper is a characteristic illustration. Such signs of prosperity and enterprise are very pleasant to see in a deserving journal like the A. B. J.

FIRE during the past month, burned up the supply factory of J. W. Bittenbender, of Knoxville, Iowa; the ware house of the Clemons-Mason Commission Co., of Kansas City, Mo. and the office of the *Progressive Bee Keeper*. The Clemons-Mason Co., was insured, the others were not. I do not know how the fire will affect the publication of the *Progressive*. Hope it will be able to follow the example of the *Phoenix*.

WEIGHING COLONIES IN AUTUMN.

Mr. Doolittle in *Gleanings*, criticises the plan of weighing colonies in the fall and deducting the weight of hives combs and bees to ascertain the amount of stores on hand. His objections are that some combs may contain much bee bread, the old combs are heavier than new, some colonies contain more bees than others, etc. His plan is to open each hive, raise each comb and estimate (guess) the amount of honey in each comb, having first attained to considerable proficiency at guessing by having shaken the bees from a number of combs and weighing the combs singly. The plan allows an inspection of each comb to determine in regard to its character and contents, and probably is more accurate than any other plan. To me it seems to "fussy." I would prefer to feed each colony five pounds more syrup then it really needed to carry it through than to pull every comb in the apairy out of the hives and guess how much honey was in each comb. The interest for a year on five pounds of syrup would not be much more than one cent, and the work of feeding it would be much more pleasant to me than that of pulling colonies to pieces in the fall.

SOUTHERN BEE-KEEPING DIFFERS from that at the North mainly in the absence of the wintering problem. So writes Mr. J. H. Hill, of Grove City, Fla. At the North the honey flow comes on suddenly and is of short duration, while at the South it comes on gradually and lasts three or four months—some honey coming in nearly all the year. Then again, the season is earlier at the South. In order to get much benefit from a Northern bee journal he says that it is necessary to read, say, last year's May number this year in March.

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MAGNITUDE OF THE QUEEN TRADE.

In response to the request in the last REVIEW as to the number of queens each breeder had reared the past season, I have received the following replies:—

Atchley Jennie, Floyd, Tex.	2,800
Bankston C. B., Thorndale, Texas	700
Compton W. A., Lynnville, Tenn.	120
Case J. B., Port Orange, Florida	745
Doolittle G. M., Borodino, N. Y.	712
Frazier W. C., Atlantic, Iowa	150
Green J. A., Dayton, Ills.	296
Golden J. A., Reinersville, Ohio	77
Hicks C. M., Hicksville, Md.	175
Kildow A. L., Sheffield, Ills.	141
Leininger Bros., Ft Jennings, Ohio	800
Lockhart & Co. F. A., Lake George, N. Y.	500
Michael J. A., German, Ohio	300
Moore J. P., Morgan, Ky.	680
Mott George, Spurger, Texas	250
Nebel & Son Jno., High Hill, Mo.	1180
Pike D. A., Smithburg, Md.	337
Quigley E. F., Unionville, Mo.	297
Thies Chas. H., Steeleville, Ills.	568
Trego S. F. & I., Swedona, Ills.	949
Total	11,715

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THE BEE AND HONEY SHOW AT THE DETROIT EXPOSITION.

Two years ago I published in the REVIEW a result of my annual trip to the fairs. With the exception of the ever-varying little incidents, one fair season is the counterpart of another. At each end of the route, this year, a careless drayman allowed a box of bottles full of honey to slide from the top of the load to the pavement—"kersmash." About half the bottles were picked up whole and cleaned up "as good as new." Last year the street "gamins" stole more honey than usual. Another year the exhibitors spent a part of one night moving things about to keep them out of the water that dripped through a leaky roof. The older exhibitors come to look at these little happenings with a philosophical nonchalance that is almost amusing in its coolness.

The Detroit Exposition furnishes a splendid building, offers liberal premiums, employs competent superintendents and judges, and taken all in all the inducements are such as to put a man on his metal. The result is that the best bee and honey shows that I have seen have been at the Detroit Exposition. I have many times fairly "ached" to give my readers a picture of some of the displays, but the trouble has been to get good photographs. In the upper story, where the bee keepers make their display, the walls are nearly all glass. The tall windows extend up as much as twenty feet from the floor. Mr. Hunt and myself have tried having photographs taken but the strong light streaming in the big windows right in the camera's eye "blinded" it so that the result was decidedly blurred. This year as soon as the exhibit was in place and the premiums awarded I skipped for home and was fortunate enough to be there to welcome the new baby when she arrived. The last day of the fair I went back and in the evening as Cutting and myself were sitting upon one of the benches near the great fountain in the center of the building enjoying a good comfortable chat, my attention was suddenly attracted by an artist taking a flash light photograph of a group of boys dressed as "brownies" and employed as an advertising scheme by the U. S. Baking Co. It came to me like a "flash" that by means of a flash light at night we might get some good views of the bee and honey exhibits.

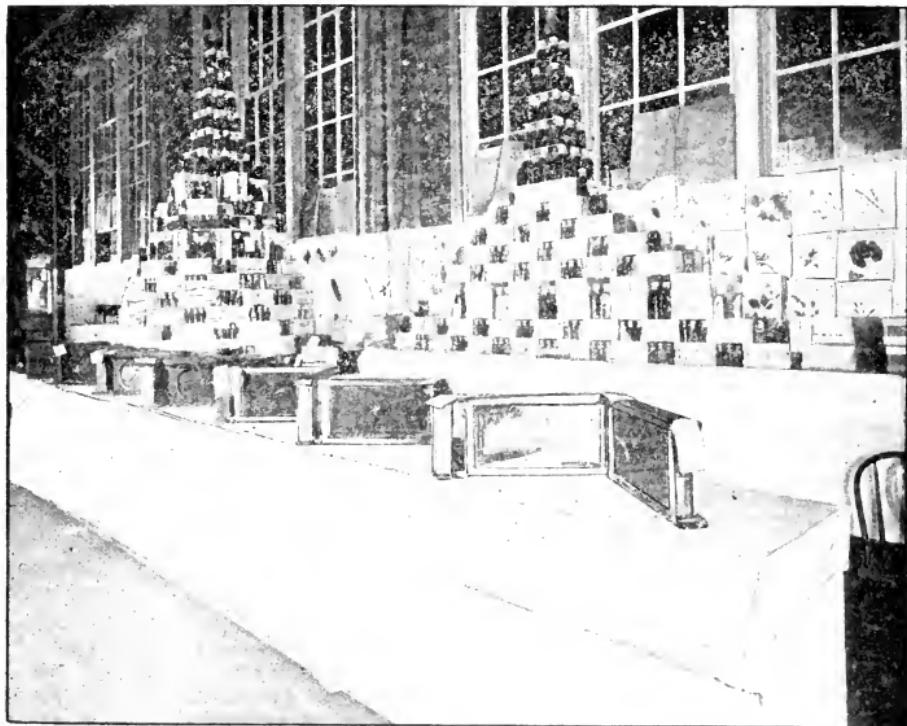
Let me explain to you in regard to taking flash light pictures. In the inside of large buildings dimly lighted, in caves or mines, or in the night, photographs cannot be taken without using artificial light. Ordinary artificial lights are not sufficiently strong, but the burning of magnesium furnishes so brilliant a light that it dazzles the eye. There are several methods of burning it. The artist at Detroit had a bright reflector about a foot and a half square. In front of the reflector in a line parallel with its surface are three wicks supplied with some kind of oil the same as in a lamp. I didn't learn what kind of oil was burned. Perhaps it is not oil. It may be alcohol. No chimneys are used. On the surface of the reflector just back of each blazing wick is an orifice and connecting with each orifice a rubber tube, and these tubes connect with a large rubber bulb that by a sort of squeezing, pumping movement can be greatly inflated.

Pressure of the bulb sends a stream of air from each orifice into the blaze in front of it. Now to the point. Just a little back of and above each orifice is a reservoir having connection with the orifice. These reservoirs are filled with powdered magnesium, and when the air rushes through it sucks down and carries with it into the flame a perfect shower of magnesium which burns with a flash that is almost blinding. When everything is in readiness several flashes of the strong light are thrown upon the object to be photographed and the result is a sharp clear picture.

Upon inquiry I learned that Mr. Hunt had already had his exhibit photographed upon a previous evening. The Boyden Bros. of

stage of the work would not have done justice to the show they made, hence it only remained to photograph my own display.

The pyramid at the left is round. As will be seen, it is composed of 12-pound cases of comb honey, with the spaces caused by piling them in circular form filled with the different sizes of the Muth jars filled with extracted honey. The upper part of the pyramid is of pound bottles with tin foil caps and a sheet of glass bound with gilt paper between each tier. Each pyramid is surmounted by a bouquet of goldenrod, but unfortunately the artist did not elevate the camera sufficiently to take in these crowning beauties. The pyramid against the wall really explains itself. How the light com-



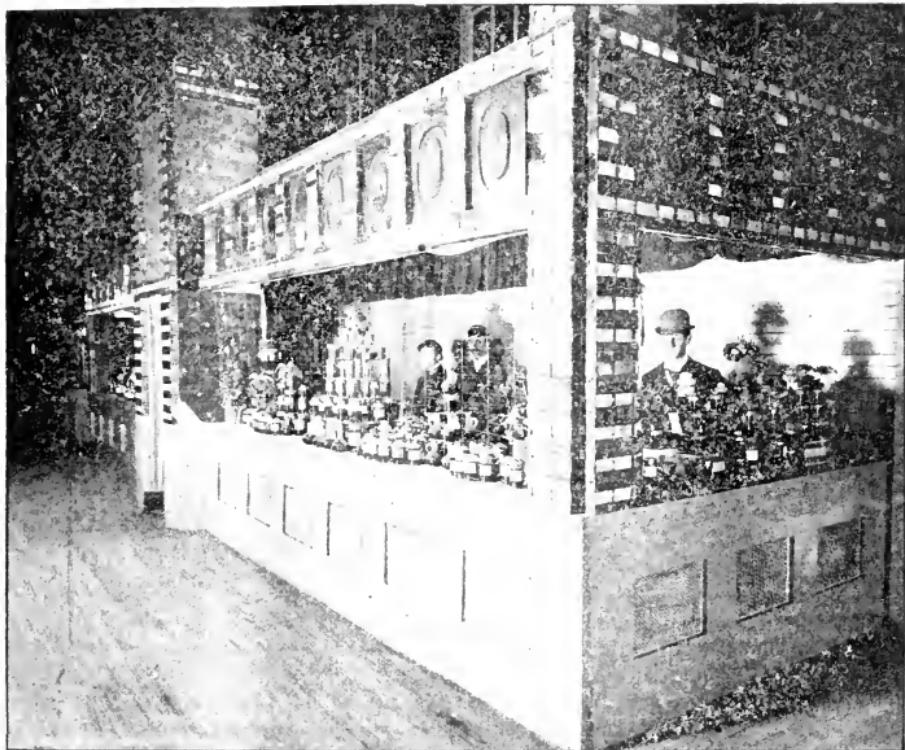
W. Z. HUTCHINSON'S EXHIBIT AT THE DETROIT EXPOSITION.

Saline, Mich., new exhibitors, had a fine show of extracted honey in several pyramids, several nuclei of bees, a show case of comb honey and some as fine cakes of wax as I ever saw, honey extractor, hive, etc., etc. They had already commenced packing up and a picture of their exhibit at that

ing in these big windows does make the honey sparkle! Against the wall, as a background, are tacked specimens of honey producing plants, pressed and mounted. I had more single-comb nuclei than could be placed in a straight line for lack of room, and I had to set them up like a rail fence.

See that little white spot near the center of some of them? It is a small piece of paper upon which is printed with the type writer the name of the variety of bee. In the sixth nuclei from the end appears some very small white specks. (They show quite

by handsome curtains. Inside, the floor is carpeted, while a couch and easy chairs invite the tired bee man to come in, sit down and rest. Mr. Hunt's extracted honey is put up in a great variety of fancy packages, and where it is possible to use flowers, to



M. H. HUNT'S EXHIBIT AT THE DETROIT EXPOSITION.

distinctly in the photograph but may not come out very clearly in the cut.) They are some very bright yellow bees. Those papers put over some of the window lights are to hide some windows bright with electric light that show through from another part of the building.

Mr. Hunt's display is really palatial. It is a sort of castle 8 feet wide by 32 feet long having a central tower 16 feet high. Of course this is a frame work of boards but it is completely covered and concealed by small cases of comb honey, panels of molded wax, sheets of foundation, beeswax buttons, etc., etc. The panels in the lower part are of perforated zinc. Through the lower part of the tower is a door way closed

good effect he is lavish in their use. See those fine white perpendicular and horizontal lines in front of his exhibit? Can't you guess what they represent? Well you know honey is quite a sticky substance and sometimes when a boy's hand comes in contact with a package, the adhesion is so great that Mr. Hunt never sees the package again. These lines are to prevent such contacts. Poultry netting will answer the same purpose but looks bungling compared to fine wires which are scarcely visible until the hand touches them.

Mr. Hunt's exhibit extends as much further down into the dark beyond, as it shows in the picture. The part not shown is devoted mostly to a display of supplies.

Oh yes, who are the folks that we see? Look just this side of the main tower, and you will see Mr. Hunt's head. He is wearing a cap and a full beard. The next one this way is his boy, Elmer. I don't know who stands back of Elmer, but I feel quite sure that the young man down at this end is a young man living near friend Hunt's. He came and helped in putting up the exhibit. "He is a genius,"—so says our genial friend Hunt.

H. D. Cutting was superintendent, J. H. Larabee awarded the premiums. Dr. A. B. Mason and E. R. Root were visitors at the same time and the whole "coterie" us gathered one evening on a little balcony overlooking the grounds where we could look down upon a babel of sights and sounds. Below us was the great "bank" of boilers that furnish steam to run the big engine and the power to drive the dynamos making electricity with which to turn night into day. When the firemen swung back the furnace doors the ruddy glow from the coal fire came up and illuminated such a row of happy, smiling, aminated faces that it seems to me are seen only where a few bee keepers are gathered together.



SHALL WE RAISE SUGAR HONEY?

Last spring I cut off the discussion upon this question because even its bare mention caused so much excitement that it seemed impossible to reason coolly or secure fair decisions. Recently published reports showing that even the best chemists and a class of forty students could detect no difference between "sugar-honey" and the best honey from basswood and clover have again brought the subject to the surface. If, as Mr. Hasty has said, sugar honey gratifies the eye, tickles the palate and nourishes the body, if it fulfills every requirement of floral honey, if as Prof. Cook says it is honey why need it not become a legitimate product of the apairy?

Opposition to discussion has been urged on the ground that sugar honey could be produced only at a loss. "If it can't be raised profitably, why discuss its production?" "Let some one raise a pound of sugar honey at a profit, *just one pound*, 'they' said, and then—perhaps." These were some of the expressions used. To settle this point I have been experimenting a little the past season. From the feeding of 150 pounds of sugar I have

secured 135 pounds of finished-comb honey. The sugar cost \$7.50; the honey would certainly sell for \$20.00. This honey has been awarded first premium at fairs, been furnished to neighbors and placed before visitors, yet its origin has never been suspected. This has been done simply as an experiment, and has completely proved what I already believed to be true.

Now if sugar honey can be raised at a profit, if it is really and truly honey, I ask in all seriousness and earnestness what are the objections to its production and sale? There is no occasion for indulging in florid rhetoric and exclamation points, simply lay aside preconceived notions, allow *reason* to reign supreme, and coolly and calmly say why this extention of the bee keeping industry would be wrong or work any injury to the pursuit.

I think there is no better time than the present in which to settle the question and I propose to devote the November REVIEW to its discussion. Prof. Cook's article will answer for a "leader"—a much better one than I could write.

EXTRACTED.

Displaying Advertisements.

After working as the REVIEW has to induce advertisers to pay more attention to their advertising, to the wording, "get up", and display of their announcements and to changing them frequently, it is very encouraging to see an influential journal like *Gleanings* falling into line as it does in the following clipped from the last issue:

"Neat and novel display is one of the important requisites in advertising; and to help our patrons we are always glad to offer our suggestions or to submit proofs of advertisements, free of charge. As a general thing if our customers will allow us to use our own judgement as to display, not cramping us too much in space, we can suit them better than to try and carry out a certain style that they have in mind. We have a good many advertisers who have been with us for years; and if there are any of these who would like to see proofs of their advertisements reset according to our own ideas of display, we will send them free of charge. An advertisement ought to be changed occasionally, else it becomes worn out and people do not see it."

I most heartily endorse every word of the above and add that I, too, would be more

than pleased to re-set any of the advertisements of old customers according to my ideas of display if allowed to use as much space as I think necessary, and submit proofs for approval. Most advertisers send in their copy and say put it in so many lines of space. Sometimes there is scarcely room to squeeze it in. The editor hesitates about urging the use of more space for fear it will be thought that he is actuated by selfish motives. If a larger space cannot be afforded better say less and have it well displayed. *Gleanings* advertising pages have improved wonderfully of late. Some of the advertisements are very effectively gotten up, tasty ornamental borders are used, etc.

Chemical Analysis and Honey Adulteration.

Reference was made in the last REVIEW to the fact that samples of pure honey submitted by Prof. Cook for analysis, were pronounced adulterated with cane sugar. Considering the "pounding" that the REVIEW, its editor and some of its correspondents have received for the part they took in the "sugar honey" discussion, it is not surprising that a triumphant smile flitted across the face of the editor when he read the following from the *Agricultural College Speculum*, and learned that even the best chemists put "sugar honey" and floral honey in the same class. That they detected the sugar-fed honey is to their credit, but this is all lost when they put floral honey in the same class, and it should teach them that there is something yet for them to learn about the composition of honey. Here is what the *Speculum* says:—

□ "It is well known that sucrose or cane sugar is chemically distinct from glucose; that unlike glucose it will not reduce the copper salts, and has a strong right-handed rotation. The nectar of flowers is largely cane sugar.

Commercial glucose reduces the copper salts and because of the presence of dextrose gives a right-handed rotation.

Invert sugar—cane sugar that has been reduced by heating with an acid—is left-handed in its rotation. It is usually given as 25 degrees.

Bees gather the cane sugar of nectar and while gathering and passing to the hive they reduce it by digestion, or change it to invert sugar. Thus honey contains from two to eight per cent of sucrose, sixty to seventy-five per cent of reducing sugar levulose and dextrose, and gives a left-handed rotation rarely higher than 20 degrees.

As bees digest the nectar of flowers, we would suppose that honey gathered very rapidly would be less perfectly digested, as it would be a shorter time in the digestive canal and so would contain more sucrose, and less reducing sugar. As bees gather sweets from such varied sources: widely different flowers, sap and secretions from various insects, we would suppose that the honey might vary not a little.

Thus I have long wondered if the formulæ depended upon by our chemists were entirely reliable, and sufficient to always determine the genuine from the adulterated.

To determine this point, I recently sent over fifty samples of honey to three of our ablest chemists, viz: Dr. R. C. Kedzie, Prof. H. W. Wiley, government chemist, and Prof. M. A. Scovell of Kentucky. I have preliminary reports which are exceedingly interesting.

The samples which I sent were simply numbered. There were honeys from all our noted honey plants, several samples of honey dew, honey stored rapidly from pure cane syrup fed very rapidly to the bees, and mixtures of honey and glucose.

The samples of honey adulterated with glucose, were detected, but with them was classed a sample of aphis honey, which our bees gathered from bark lice, and which was rank and entirely unmarketable. Two other samples of honey dew were pronounced genuine honey. One of these was from cynip infested oak acorns, and the other from a lachnus on the larch. Both were pleasant to the taste.

The samples of honey from cane sugar syrup, one extracted the next day after it was stored and the other not till it was capped, were both detected. But with them were classed genuine honey from basswood, white clover, both were very fine, and one from horse mint, all very rapidly gathered. Thus my opinion, often expressed to my students, that our chemists could not distinguish genuine honey which was rapidly gathered from that secured by feeding cane syrup, is fully sustained.

Three samples, one white clover, one golden rod, and one white sage, all very rapidly gathered by the bees, gave such a high left-handed rotation that there was a suspicion of adulteration, with invert sugar. Yet these were all genuine honey of superior excellence.

Three other samples, one from black mangrove, one from an unknown source, stored in Louisiana, and which never granulated, and one from horse mint, the latter gathered very rapidly, depicted themselves exactly as would invert sugar.

Thus we see, that while the chemists can detect adulteration, even with one-third or one-fourth glucose, they could not distinguish honey from flowers, from that secured by feeding bees pure cane sugar syrup. That while they can now detect adulteration by use of commercial glucose, that most if not always used, they cannot by use of present methods, detect honey produced by feeding bees wholly or in part on cane sugar syrup.

A. J. COOK."

Since the foregoing was put in type, *Gleanings* for Sept. 15th has come to hand, and in it I find an article from Prof. Cook covering the same grounds as the extract from the *Speculum*, but given in more familiar language. It brings out the "side lights" and gives the interesting little incidents that all wish to know, hence I take pleasure in copying it:

Glucosed Honey Easily Detected, but "Sugar Honey" is Classed with Clover and Basswood.

"I have preliminary reports from each of the three able chemists who have kindly consented to aid us in the important work of detecting adulteration, and arriving at some standard which shall enable us to determine when honey is pure. I can as yet give only a preliminary report; but I can give enough to show that the work is important; and as I am being pressed for a report I send the following:

I sent over fifty samples to be analyzed. I sent samples of honey from various sources, some gathered very rapidly, some slowly, some gathered from honey-dew, some made by mixing honey with one-third or one-fourth glucose: some which the bees stored from pure cane syrup very rapidly—twenty-three pounds in one night—and extracted the next morning, and the same extracted after it was capped over. These were all sent by number, so that I alone knew just the source of each.

Each chemist detected the honey that was adulterated with glucose, and placed with this a sample of the plant-louse honey. Thus, as glucose will be the common adulterant we may feel that this is practically satisfactory. If from fifty samples taken from very varied sources, only one (and that honey-dew, that never could be sold as honey) was found which could not be distinguished from glucose, we see the chemists can detect this most common adulterant, and enable us to prevent the worst form of adulteration. It is interesting to note that Prof. Wiley—see Bulletin No. 13, p. 798—speaks of pine-tree honey (this is undoubtedly honey-dew) which was like honey adulterated with glucose. The honey-dew which I sent was not from pine-tree aphis, however. I also sent two other samples of honey-dew—one from oak-galls, and the other from larch aphis, which were pleasant to the taste, and pronounced by the chemists as genuine honey.

The honey which was simply cane sugar rapidly stored—and, of course, as we know, partially digested by the bees—was pronounced adulterated with cane sugar. But with these were included samples of the finest honey I ever saw—one from basswood, one from white clover, very fine, and one from horsemint, all of which I secured because they were gathered very rapidly. Thus we see the chemists can not surely detect adulteration with cane sugar, if the bees are required to digest or invert the

sucrose. If the chemist puts the best quality of white clover and linden honey with honey stored from pure cane syrup, it stands to reason that we could feed our bees syrup made of, say, one-third honey and two-thirds cane syrup, and the chemists could not detect it: nor could the consumer. I had each member of my class of forty in entomology taste of the honey from the cane syrup. All pronounced it fine, and not one suspected, even when asked, that it was any thing but genuine honey procured from the ordinary source, and normal in every way.

Thus we have proof of what I have long believed, that our best honey, if gathered rapidly, can not be told from honey stored from pure cane-sugar syrup.

Three samples, one white clover, one golden-rod, and one white sage, all fine and rapidly stored, are regarded as suspicious, as they deport themselves as do honeys with an abnormal amount of invert sugar. Three other samples, one smartweed, one black mangrove, and one horsemint, all peculiar in that they were very rapidly gathered, act as pure invert sugar—that secured by artificially reducing cane sugar. Thus six samples, all certainly genuine, and very excellent, would be pronounced as suspicious, though possibly not condemned as impure.

CONCLUSIONS.

1. We see, then, that the chemist can detect honey adulterated with commercial glucose from all genuine honey, except some from honey-dew, which is so rank that it would never go on to the market.

2. The chemist cannot tell honey—even the very best—from that secured by feeding a syrup made of pure cane sugar.

3. Honey that is very rapidly gathered deport itself just as does that secured by feeding pure cane syrup; and so, if it be desirable to detect such adulteration, the chemist must revise his methods, as he is not as yet able to do so.

4. Cane-sugar syrup fed to bees is inverted, and, when stored, is so like our best honey that chemical methods cannot detect it.

5. Cane-sugar syrup, unless fed to bees, could be easily told. The bees, by digesting the syrup, change it as they do the nectar which they gather from flowers, which is also cane sugar.

6. We know that honey is largely adulterated; but almost always, if not always, by feeding glucose. This can be detected. Thus we can successfully fight this evil. Prof. Wiley will help us. Let us declare the battle on.

7. I urged at the Detroit convention, in 1890, that the Bee-Keepers' Union wage this warfare. It has done grand service. It can do this work. As a member and officer, I vote that it assume this added responsibility and win yet grander laurels. Why not? It can crush the evil.

8. Bee-keepers do not adulterate. Dealers—wholesale dealers—do this. If bee-keeping dealers have done it, they, with all of their kin, should be exposed and punished. If we will, we can down the enemy. *I vote aye.*

A. J. COOK.

AG'L COLLEGE, Mich., Sept. 3."

Barnes' Foot and Hand Power Machinery.



This cut represents our Combined Circular and Scroll Saw, which is the best machine made for Bee Keepers' use in the construction of their hives, sections, boxes, etc.

8-91-16t

MACHINES SENT ON TRIAL.

FOR CATALOGUE, PRICES, ETC.,

Address W. F. & JNO. BARNES CO., 384 Ruby St., Rockford, Ills.

IF YOU WANT THE

BEE BOOK

That covers the whole apicultural field more completely than any other published, send \$1.00 to Prof. A. J. Cook, Agricultural College, Mich., for his

Bee-Keepers' Guide.

Liberal Discounts to the Trade.

Great, Red-Mark

Sale. To reduce the large stock of bee supplies that I have on hand, I will, until April 1st, 1893, sell them nearly $\frac{1}{3}$ cheaper than at former prices. Send for a description of my new feeder and the "red mark" prices and you will see how to save money.

W. D. SOPER,
Jackson, Mich.

8-92-tf
Please mention on the Review

I can furnish

Italian Queens until the middle of Nov. Un-
tested. 75 cts Tested,
one dollar. W. Z.

Hutchinson, Flint, Mich.

Cheap Freight and Quick Transportation.

Being located at the most central point of railroad and express companies enables us to furnish bee keepers with supplies at less cost to themselves than any house in the country. We furnish everything needed in the apiary, as low as the lowest and as good as the best.

COOK'S COMPLETE HIVE combines all the most approved methods of hive making. It is a complete arrangement for out-door wintering and is equally well adapted to producing comb or extracted honey. Send for circular. Fine lot of **Bees for Sale** cheap.

J. H. M. COOK, [SUCCESSOR TO KING & ASPINWALL] 78 Barclay St., New York City.



Second Hand Supplies.

G F the second hand supplies that I have been advertising in the REVIEW, the following remain unsold:—

100 old-style, Heddon surplus cases at 20 cts. (as a non-separated case, they have no superior); 25 slatted honey boards at 10 cts.; 40 "dummies" for contracting the brood nest, 3 cts.; 20 Heddon feeders at 40 cts.; 25 Alley queen and drone traps at 25 cts. All these are practically as good as new.

I also have 2,000 new, four-piece, white poplar sections at \$4.00, and 200 white poplar, 12-lb shipping cases in the flat at 10 cts. They were made by Dr. Tinker, and cost me 11 cts. each, besides the freight. They are neat, and particularly adapted to exhibiting honey at fairs.

I would sell any of these articles for cash, or I would exchange them for extracted honey.

W. Z. HUTCHINSON, Flint, Michigan.

PATENT WIRED, COMB FOUNDATION HAS NO SAG IN BROOD FRAMES.

THIN, FLAT BOTTOM FOUNDATION HAS NO FISH BONE IN SURPLUS HONEY.



Being the cleanest is usually worked the quickest of any foundation made.

J. VAN DEUSEN & SONS,
(SOLE MANUFACTURERS),

3-90-tf Sprout Brook, Mont. Co., N.Y.

Please mention on the Review

IF you wish to advertise anything anywhere at any time write to GEO. P. ROWELL & CO., No 10 Spruce St., N. Y.

Please mention on the Review

J. FORNCROOK & CO.



WILL FURNISH YOU THE

"BOSS" ONE-PIECE SECTION

AS CHEAP AS THE CHEAPEST

And the **BEST** in the Market.

Also **DOVETAILED HIVES**

and other **SUPPLIES.**

Write for Price List.

WATERTOWN, Wis., Jan. 1, 1892.

12-91-12

BASSWOOD HONEY, Extra Quality.

USUAL LOW PRICES.

Address

JAMES HEDDON,

Dowagiac. Michigan.

SIX MONTHS

for only 15 cents.

White Mountain Apiarist.

This offer seems to have hit the right chord. Everybody wants to see what the APIARIST is like. Try it. WHITE MOUNTAIN APIARIST, Groveton, N. H.

For \$1.50 I will send the Review for 1892 and a fine, young, laying, Italian queen.

Queen alone, 75 cts. For \$1.75 I will send the Review, the queen and "Advanced Bee Culture." Tested queens, \$1.00. The Review and a tested queen \$1.75 A discount on large orders. W. Z. Hutchinson, Flint, Mich.

REVIEW

Names of Bee - Keepers.

TYPE WRITTEN.

The names of my customers, and of those asking for sample copies, have been saved and written in a book. There are several thousand all arranged alphabetically (in the largest States), and, although this list has been secured at an expense of hundreds of dollars, I would furnish it to my advertisers at \$2.00 per thousand names. A manufacturer who wishes for a list of the names of bee-keepers in his own state only, or, possibly, in the adjoining states, can be accommodated. Any inquiry in regard to the number of names in a certain state, or states, will be answered cheerfully. The former price was \$2.50 per 1000, but I now have a type writer, and, by using the manifold process, I can furnish them at \$2.00.

W. Z. HUTCHINSON, Flint, Mich.

BEE SUPPLIES

RETAIL
AND
WHOLESALE

Everything used in the Apiary
Greatest variety and largest stock in the West. New catalog, 60 pages, free to bee-keepers.

Special Discount to Dealers.

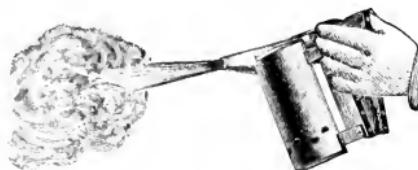
1-92-tf

E. KRETCHMER, Red Oak, Iowa.

Improved L. hive painted \$1. Alsike clover, Japanese buckwheat, cheap. Sample 5 cts. 2000 Sections, \$5.50. L. Clark, Wiscoy, Minn.

QUEENS

HILL'S SMOKER and FEEDER.



Smoker burns hard wood chips without special preparation. Very reliable. Greatest smoking capacity. Easiest to start. Cheapest because it saves time. Price, \$1.20. By mail, \$1.40. Per dozen, \$10.80.



Best Bee-Feeder. Most convenient. Saves feed. No daubing or drowning. Two to seven feeders full may be given a colony at one time which will be stored in the combes in ten hours. Price, per pair, 30¢; by mail, 40¢; per dozen, \$1.60. Has a sale of 2,000 per month. Address A. G. HILL, Kendallville, Indiana.

These smokers and feeders are kept in stock by Thos. G. Newman & Son, Chicago, Ill. G. B. Lewis & Co., Watertown, Wis. W. H. Bright, Mazepa, Minn. Chas. Dadant & Son, Hamilton, Hancock Co., Ill. E. Kretschmer, Red Oak, Iowa. H. McWilson & Co., 202 Market St., St. Louis, Mo. F. H. Dunn, Yorkville, Ill. W. D. Soper & Co., Jackson, Mich. Chas. A. Stockbridge, Ft. Wayne, Ind. A. F. Fields, Wheaton, Ind. W. S. Bellows, Ladora, Iowa. E. F. Quigley, Unionville, Mo. Gregory Bros., Ottumwa, Iowa. Miller Bros., Bluffton Mo. G. K. Hubbard, Ft. Wayne, Ind. Theodore Bender, 18 Fulton St., Canton, Ohio. Muth and Son, Cincinnati, Ohio. Levering Bros., Wiota, Cass Co., Iowa.

ITALIAN QUEENS AND SUPPLIES FOR 1892.

Before you purchase, look to your interest, and send for catalogue and price list.

J. P. H. BROWN,

1-88-tf. Augusta, Georgia.

HOW DOES THIS Strike You?

One Punic queen, one golden Carniolan queen, one Italian queen and the AMERICAN APICULTURIST one year for \$3.00. Three of either of the above queens mailed for \$3.00.

Alley's Perfection, Self-Hiver.

\$5.00 will be paid in each case where this hiver fails to hive all the bees that issue. A full description with testimonials as to its success and practicability mailed free. Sample hivers, by express, \$1.00 each.

H. ALLEY, Wenham, Mass.

Please mention the Review.



Bingham's Perfect Safety SMOKER.

Pat. 1878; Re-issued 1882. Pat. 1892

No more soiled sections, burned fingers, or burned Apiary. Any large advertiser of Bingham Smokers will send you a Perfect Doctor, Perfect Conqueror, or Perfect Large Smoker, if you will send to him 25 cts. more than the regular mail price, and ask for either of the three sizes mentioned.

Bingham & Hetherington, Abronia, Mich.

Golden Italians,

Five and three-banded queens, warranted pure and mated, at the following prices:

In June, 90 cts each, or six for \$4.50. July and after, 75 cts each or six for \$4.00. Tested queens in June, \$1.50, or three for \$4.00. July and after, \$1.25 or three for \$3.50. Select, tested queens from \$2.00 to \$5.00 each. 4-92-tf

A. SIDLER, Thayer, Mo.

Please mention the Review.

Bee Hives, Sections, Etc.

We make the best goods and sell them cheap. Our sections are far the best in the market.

Our works turn out the most goods of any factory in the world.

Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

G. B. LEWIS CO.,

11-91-tf. Watertown, Wisconsin.

Please mention the Review.

WINTER CASES

We furnish outside cases, for wintering bees, that will take one or two colonies. Our prices on these are very low. We furnish EVERYTHING used in the apiary. Circular on application.

I. J. STRINGHAM,
12-91-12t. 92 Barclay St., New York City.

Foundation Reduced Three Cts. a Pound. \$3.00 Sections Only \$2.60. Bingham Smokers at Cost. Free Price List of Everything Needed in the Apiary. M. H. HUNT,
Bell Branch, Mich.

Please mention the Review.

5 % DISCOUNT

On all our Catalogue prices (except shipping cases)

Until Dec. 1.

Fall circular describing
OUR OUTSIDE WINTER CASE
(for all hives) now ready.

Large illustrated catalogue and sample copy of the AMERICAN BEE - KEEPER (24 pages) free. Address

THE W. T. FALCONER Mfg. CO.,
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Please mention the Review.

A Good Type Writer CHEAP.

For the past three months I have been using an Odell type writer. It is the best, low priced machine with which I am acquainted. Its work is the equal of that done by any type writer. I doubt if so great speed can be attained as is the case with the keyed machines, but I can write more rapidly and easily than I can with a pen, and I presume that those receiving my letters can read them with greater ease and certainty. The machine is simple, easy to learn and not likely to get out of order. There are two styles, one costing \$15.00, and the other \$20.00. The Odell Co. has asked me to take the agency for the sale of the machines, and I shall be glad to send specimens of writing and illustrated, descriptive circular to any one thinking of buying a type writer. W. Z. HUTCHINSON, Flint, Mich.

ESTABLISHED 1876.
S. T. FISH & CO.,

COMMISSION MERCHANTS.

Dried Fruit, Honey and Farm Products.

189 SOUTH WATER ST., CHICAGO.

We make a specialty of our honey department and ask for your consignments and correspondence. Reference, any bee-paper.

992-6

WHITE POPLAR SECTIONS.

We have New Steam Power, and New Buildings, and are now ready to furnish White Poplar Sections, Clamps, Crates and Wood Sides at short notice. Workmanship, Quality and Price unsurpassed. Send for sample and price list.

PRIME & GOVE,
1-90-1f Bristol, Vermont.

—If you are going to—
BUY A BUZZ-SAW,

write to the editor of the REVIEW. He has a new Barnes saw to sell and would be glad to make you happy by telling you the price at which he would sell it.

Only **\$5.00** will buy

One good, Simplicity, ten-frame hive with a good colony of Italian bees and a queen. \$4.00 will buy an eight-frame hive, bees and queen, L. and Hoff. frames. Queens and nuclei in season. JNO. A. THORNTON, Lima, Ill. 5-62-6t Please mention the Review.

1852.

REDUCTION ON THE PRICE OF

1891.

Langstroth on the Honey Bee. (REVISED.)

PRICE BY MAIL, \$1.40: BY EXPRESS OR FREIGHT WITH OTHER GOODS \$1.25.

By its copious indexes, by its arrangement in numbered paragraphs, including reference numbers on any question in bee culture, any information can be instantly found. This book is the most complete treatise on bee keeping yet published. A FRENCH EDITION JUST ISSUED.

1878. DADANT'S COMB FOUNDATION. 1891.

More than Ever. Better than Ever. Wholesale and Retail.

Half a Million lbs. Sold in 13 Years.

Over \$200,000 in Value.

It is THE BEST, and guaranteed every inch equal to sample. All dealers who have tried it have increased their trade every year. Samples, Catalogue, free to all. Send your address.

We also make a specialty of Cotton and Silk Tulle of very best grade for bee-veils. We supply A. I. Root and others. 7,000 Yards just received. Prices Very Low. Samples Free.

Smokers, Honey Sections, Extractors, Tin Pails for Honey, Etc. Instructions to Beginner with Circulars Free.

4-92-12

Mention Review.

CHAS. DADANT & SON, Hamilton, Hancock Co., Ills.

NOV. 10, 1892



At Flint, Michigan.—One Dollar a Year.

ADVERTISING RATES.

All advertisements will be inserted at the rate of 15 cents per line, Nonpareil space, each insertion: 12 lines of Nonpareil space make 1 inch. Discounts will be given as follows:—

On 10 lines and upwards, 3 times, 5 per cent; 6 times, 15 per cent; 9 times, 25 per cent; 12 times, 35 per cent.

On 20 lines and upwards, 3 times, 10 per cent; 6 times, 20 per cent; 9 times, 30 per cent; 15 times, 40 per cent.

On 30 lines and upwards, 3 times, 20 per cent; 6 times, 30 per cent; 9 times, 40 per cent; 12 times, 50 per cent.

CLUBBING LIST.

I will send the REVIEW with—	
Gleanings, (\$1.00)	\$1.75.
American Bee Journal, (1.00)	1.75.
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Bee Keepers' Guide (.50)	1.40.
Apiculturist (.75)	1.65.
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For Simplicity and Durability

Bingham Patent Smokers,

AND

BINGHAM & HETHERINGTON

Honey Knives,

ARE WITHOUT QUESTION

THE BEST ON EARTH!

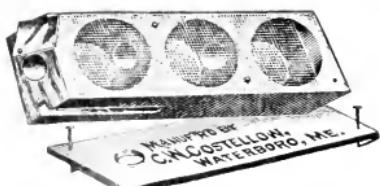
Doctor Smoker,	3½ inch,	2.00
Conqueror Smoker,	3 " " " " "	1.75
Large Smoker,	2½ " " " " "	1.50
Extra Smoker,	2 " " " " "	1.25
Plain Smoker,	2 " " " " "	1.00
Little Wonder Smoker, 1½, . . . . .	" " " " " . . . . .	.65
Bingham & Hetherington Knife,	" " " " "	1.15

Upon receipt of price, Smokers or Knives will be sent postpaid. Descriptive Circular and Testimonials sent upon application.

BINCHAM & HETHERINGTON,

Abronia, Michigan

Please mention the Review.



Western BEE-KEEPERS' Supply Factory.

Largest Business of the kind in the West.



We manufacture Bee-Keepers' supplies of all kinds, best quality at lowest prices. Dovetailed Hives, Sections, Foundation, Extractions, Smokers, Crates, Vials, Feeders, Clover Seeds, Buckwheat, etc. Imported Italian Queens, Queens and Bees. Sample copy of our Bee Journal, 'The Western Bee-keeper,' and latest Catalogue mailed free to Bee-keepers. Address JOSEPH NYSEWANDER, DES MOINES, IOWA.

492-tf Please mention the Review.

We're not Satisfied until every bee keeper in the land has a copy of the

Progressive • • •

• • • Bee-keeper

It is a 16-page monthly at 50 cts. a year. Sample copy free. If you like beautiful, business bees, try

Quigley's Golden Queen.

To introduce the Progressive Bee-keeper, I will send it one year and a beautiful queen for \$1.15. Regular price of queens, \$1.00; or six for \$5.00. Warranted purely mated and safe arrival and satisfaction guaranteed.

PROGRESSIVE BEE-KEEPER,
Uni-nville, Mo.

Be. Hives and Section Boxes.

Simplicity, Langstroth-Simplicity, Standard Langstroth, Dovetailed and Champion Chaff Hives, Supers, One Piece Sections and Shipping Cases, Foundation, Smokers, etc., etc. Send for 16 page Circular.

1-92-tf PAGE & KEITH, New London, Wis.

Illustrated Advertisements Attract Attention.



Cuts Furnished for all illustrating Purposes.

QUEEN CAGES

Are my specialty. I make the Benton cage in many styles and sizes. A light cage saves postage; a neat cage creates a favorable impression; one properly arranged carries its occupants safely in either hot or cool weather; and my special machinery and large trade enable me to furnish extra nice cages, having all these advantages, at a very low price. Sample cages and prices on application.

C. W. COSTELLOW, Waterboro, Me.

WINTER LOSSES

Are not always the result of the same cause. They may come from starvation; from poor food; from improper preparations; from imperfect protection; from a cold, wet, or possibly a poorly ventilated cellar; etc., etc. Successful wintering comes from a proper combination of different conditions. For clear, concise, comprehensive conclusions upon these all-important points, consult "ADVANCED BEE CULTURE." Five of its thirty-two chapters treat as many different phases of the wintering problem.

Price of the book, 50 cts.; the REVIEW one year and the book for \$1.25. Stamps taken, either U. S. or Canadian.

W. Z. HUTCHINSON, Flint, Mich.

EVERY one in need of information on the subject of advertising will do well to obtain a copy of "Book for Advertisers," 368 pages, price \$1.00. Mailed, postpaid, on receipt of price. Contains a careful compilation from the American Newspaper Directory of all the best papers and class journals; gives the circulation rating of every one, and a good deal of information about rates and other matters pertaining to the business of advertising. Address ROWELL'S ADVERTISING BUREAU, 16 Spruce St., N. Y.

On Their Own Merits!

Those who have had queens from me say my

5-Banded Golden Italians

Are the finest Bees they ever saw. My stock is better than ever before, and I am confident there is none better in the country. **None but the very best Queens sent out;** large and prolific, which will breed the prettiest and gentlest Bees you ever saw. Warranted Queens, May, \$1.25; 6 for \$6.00; after June 1st, \$1.00, 6 for \$5.00, special discounts on large orders. If you prefer you can send orders now and pay for Queens on arrival. For full particulars send for circular.

BREEDING QUEENS A SPECIALTY.

CHAS. D. DUVAL,

Spencerville, Mont. Co., Md. 12-91-1f

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DON'T SEND

Across several States after Goods that can be bought just as cheaply near home, but write to

GREGORY BRO'S & SON,

Ottumwa, Iowa, for their large, 12-page, illustrated catalog of everything needed in the apiary - Hives, Sections, Shipping Cases, Smokers, Foundation, Bees, Queens, Bee Veils, etc., etc., etc.

Please mention the Review.

J. FORNCROOK & CO.



WILL FURNISH YOU THE

"BOSS" ONE-PIECE SECTION

AS CHEAP AS THE CHEAPEST
And the **BEST** in the Market.

Also **DOVETAILED HIVES**
and other **SUPPLIES.**

 Write for Price List. 12-91-12
WATERTOWN, Wis., Jan. 1, 1892.

Please mention the Review.

You'd Laugh

If you could see those California Rambler articles (illustrated); and you'd be intensely interested in reading Langstroth's autobiography, now continued in

GLEANINGS IN BEE CULTURE.

An elegantly illustrated semi-monthly of 36 pages and a tinted cover. It is packed full of good things.

Sample Copy free, or three late but different issues for ten cents, or \$1.00 a year.

Don't forget to send for our 52-page catalogue of Bee-Keepers' Supplies.

A. I. ROOT, Medina, Ohio.

PLEASE MENTION REVIEW.

FOR ALL KINDS OF **KEEPERS SUPPLIES**,
FOR ALL KINDS OF **KEEPERS SUPPLIES**,
ADDRESS LEAHY MFG. CO. HIGGINSVILLE, MO.

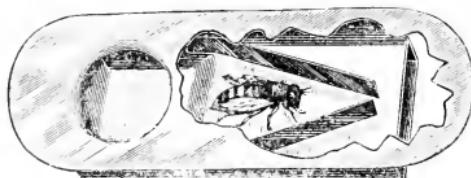
The Oldest, Largest, Best and Only Weekly Bee-Paper in America. Sample Copy Free.

—: 32 pages—\$1.00 a Year:—

The American Bee Journal

Address **GEORGE W. YORK & CO.**
* 199 Randolph St., - CHICAGO, ILLS.

To New Subscribers—3 Months for 20 cts., or From now to Jan. 1894, \$1.00.



Porter's Spring Bee-Escape

Saves temper, time and bees.

PROF. COOK says: "No bee-keeper can afford to be without them."

WM. M'EVOY, foul brood inspector of Ont., Can., says: "They should be used in every bee yard in the whole wide world."

THOS. PIERCE, Pres. Eastern N. Y. B. K. A. says: "The time will soon come when all bee-keepers will use them."

Send for circular and testimonials, and read what others say of them.

PRICES: Each, by mail, with full instructions, 20 cts. Per doz., \$2.25. If, after three months' trial, they are not found superior to all other escapes, and satisfactory in every way, return them and we will refund your money. For sale by dealers.

4-92-4f Mention Review.

R. & E. C. PORTER, Lewistown, Ill.

The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V. FLINT, MICHIGAN, NOV 10, 1892. NO. II.

The special topic of this issue is

Raising Sugar - Honey.

That of the next issue will be

Best Articles From Best Men.

[The following article came last spring after it had been decided that the sugar-honey discussion must take a rest. It was with considerable reluctance that I laid it aside, as it seemed to me to be the only real, honest attempt to combat the ideas advanced by our friend Hasty. Now that the discussion has again come to the surface, it is with pleasure that I allow friend Daggitt to be heard. In order to shorten the discussion, I sent Mr. Daggitt's article to Mr. Hasty, that his reply might appear in the same issue. Mr. Hasty's rejoinder will immediately follow this article.—Ed.]

Genuine Honey Comes Only From the Flowers.—Dire Results Expected From the Raising of "Sugar Honey."

E. A. DAGGITT.

THE importance of this subject is now brought prominently before the bee-keeping public by the claim of a leading bee-keeper that sugar syrup fed to honey bees slowly and at a suitable distance from the hives, will undergo certain changes and become honey. Such a statement made by some unknown person and published in a paper but little known would deserve but little attention, but when made by so prominent a bee-keeper as Mr. E. E. Hasty and published in, and indorsed by a journal of

such high standing as the BEE-KEEPERS' REVIEW, deserves the serious attention of every bee-keeper. The more I think this matter over the more do I comprehend its significance and realize the dangers that may come from such a statement. Unless truth overtakes this error, I fear serious consequences will follow. How quick will the sensational papers—and others too—take up this statement and herald it as proof of the demoralized condition of the honey business and that the "Wiley lie" may be true after all. Already I can see the gallant ship, Comb Honey, with her delicious cargo, driven among shoals with "breakers ahead" and if she is not skillfully managed she will be stranded on the shoals of adulteration where her former proud consort, Extracted Honey, lies stranded, and she too will be dashed and rocked by the breakers of suspicion and disgrace. May this imagery never be the figure of reality. Most nobly has this brave ship ridden the storms of the past and withstood the angry billows of the "Wiley lie" and it would be a pity if she should be driven aground at last.

Honey is a sweet product of bees *derived from flowers*, and nothing else. Mr. Hasty's "sugar honey" is only an imitation of honey. It bears about the same relation to honey that oleomargarine does to butter. It may be chemically nearly like honey. It may look quite as nice, taste just as good—but I doubt it—and be just as nourishing; but still it is not honey. Oleomargarine is chemically nearly like butter and so closely

imitates it in color and taste that it is difficult to distinguish them. It may be just as nourishing as butter but it is an imitation of it and no one wants to buy it for butter. If Mr. Hasty should try to sell his "sugar honey" to private customers as I do a part of my honey, he would be likely to get into an uncomfortable frame of mind for some one would be likely to ask him what he was selling. He would not say honey, of course, but "sugar honey." His querist would no doubt smile and want to know if he manufactured his honey. He would reply that he had fed sugar syrup to his bees in such a manner that they had made it into honey. His querist would smile more than ever, and then he (Hasty) would deliver a lecture on how honey is made and how his sugar syrup is "digested" into honey just the same as the nectar of flowers is. His querist would no doubt admire his eloquence but would continue to smile and would go off doubting. How often he would have to do this no one knows. But I fear he would be soon set down as a humbug—something that I hope he will be spared. Some people are suspicious even of genuine honey and there would be no end of trouble if "sugar honey" is introduced. I once met a man who had the brazen impudence to ask if my honey was manufactured or not. He proved to be a county superintendent of schools. This was an outcropping of the "Wiley lie."

The fallacy of Mr. Hasty's argument is shown by the fact that while he claims that his "sugar honey" is honey, he would sell it only as sugar honey—using a qualified term. If it is honey why not sell it without any qualifying term whatever? This cannot be done without committing fraud for honey is known to the trade and I suppose to everybody else who knows anything about bees, as a product of these insects derived from flowers as I stated before. As a general term it may be applied to any sweet or pleasant substance, but Mr. Hasty does not use it in this sense. Honey cannot be made from sugar syrup any more than butter can be made from certain fats and other ingredients. The raw material for honey is different from sugar syrup. Nectar contains cane sugar, but it contains also other ingredients that gives to honey its distinctive character, especially those that give it its delicious flavor and delightful aroma. These are wanting in sugar syrup. Mr. Hasty considers it a question of what does the work

when it is just as much a question of materials. If his reasoning is correct then glucose will produce glucose honey; molasses, molasses honey; honey dew or plant lice exudations, honey dew or plant lice exudation honey; and if the bees should get at the house-keeper's sweet-meats during her absence, as they will if they get a chance, it will give sweet-meat honey; and I presume that cider brought into the house from cider mills, will give cider honey, too. Where is this reasoning leading us to? Surely to the ridiculous. Yet it is the logical sequence of Mr. Hasty's reasoning. If any one produces this "sugar honey" let them be fair enough to give their product a name so that it cannot be confounded with true honey. If this "sugar honey" is put on the market it will soon be sold by unscrupulous persons as true honey, and the reputation of comb honey will go to the winds and it will be sold under suspicion thereafter, and at a reduced price.

True honey is a *natural* product and is in no sense an artificial one. It is the pure nectar of flowers gathered by honey bees and by them refined and cured into honey. It is not "digested" nectar as some style it, for digestion is the changing of food into chyle or into a state to be assimilated by organisms. Thus water and carbonic acid digested in plant cells produce vegetable fiber, &c. Animal and vegetable food digested in animal organs produce blood and nourish and give force to animal systems. The changes produced in nectar by the secretions of the honey bee are for the purpose of preserving it. There is no doubt that if these secretions were not added fermentation would take place and its value as a food would be destroyed. They cause certain changes to take place in the nectar and doubtless act as antiseptic and probably render it more nutritious and palatable. These changes are not digestion in the ordinary sense as the believers in this theory use it. The first step in the digestion of starch is to change it to sugar, but no one calls the making of glucose by the action of sulphuric acid on starch, digestion; neither does any one call the curdling of milk by rennet as is done in cheese making, digestion, although curdling is the first stage of the digestion of milk.

The moral of all this is: call things by their right name, and I think our vocabulary of apicultural names badly needs revising

for too many things are called by one name and this makes trouble and confusion.

WHITE HOUSE STA., N. J. March 1st, '92.



Reply to Mr. Daggitt in Which are Shown
the Varied Sources of Honey.

E. E. HASTY.

AS the editor decides to let the bloody war go on, and I didn't say I *would* hang up the cheese-knife, but only that I was *willing* to do so, here goes for a reply. Mr. Daggitt does not assail the central part of the fort he attacks. With good generalship he leads on against an outpost, by way of which he hopes the work can be taken. No one as yet denies that the bee is a manufacturer, and not a mere gatherer, but it is pointed out that the thing can be split in two. It is possible to maintain that part of what the bee manufactures is honey, and that a part of it is not honey. Rather a small hole to lead an army through; but as it appears to be the only available hole, very likely the fight henceforth will mostly be waged in it. These tactics necessitate the admission that even when the bee is at work on natural sources a portion of the gatherings is manufactured into, not honey, but an unnamed something else.

I wish to point out to the doughty host that this is undertaking two separate impossibilities. The first is to change the habits of speech of the entire hundred and odd millions that speak the English tongue. "Honey" is a household word. The public understand it to be the sweet bees store in their combs when at work in a state of nature. A few dozen of us bee-keepers cannot change this understanding. The dictionaries themselves cannot do it. It is the province of dictionaries, not to make the meaning of words, but ascertain and state them. If a meaning is stated wrongly, in case of a word only occasionally used, a change in the language may possibly result; but in the case of a household word, a wrong definition is simply a case of bull confronting locomotive—the language keeps on as before. Now a man who cuts down a bee tree, anywhere from Alaska to Australia, will say, "I got

thirty pounds of honey" (if that was the amount.) He never was known to say, "I got twenty pounds of honey, and ten pounds of sweet what-is-it." Furthermore you never can bring about a state of things in which any such distinction will be drawn. The public are a little at sixes and sevens in their minds as to whether or not it would be honey if syrup were fed. This is why it is needed to say "sugar-honey"—a point Mr. D. wants to know about.

As intelligent bee-keepers we surely ought not to be surprised at any amount of ignorance or misinformation about bees on the part of learned men. Authors did not *know* that large amounts of natural honey are stored from other sources than flowers. If a dictionary should say, "Tin is a white metal from Banca and Cornwall," it would only show that the author didn't know, (else didn't care) that there was tin in California and Dakota. Certainly it would not prove that the American metal was something else than tin, and that we must find a different name for it. In a similar manner the definition "from flowers" does not compel us to rule out all other honeys.

The other impossibility is a practical one in putting up honey for the market. The A. B. J. leads off and many follow, in the dictum that no insect honey must be marketed. The tendency plainly is to call all honey with a mean taste insect honey, and all well-tasting honey floral. This is false in both directions. Let us have truth. Flowers give us all grades from the delicious mangrove honey down to the helenium honey that cannot be eaten at all. Insects also give us nearly all grades from a quality so high that when dried it would almost pass for granulated sugar down to a dirty stuff repulsive both to look and taste. When the bees themselves mix a fair quality of insect honey with floral honey of similar quality (as they no doubt do in very many cases) it is practically impossible to discriminate. Even if he were such a wise person, Mr. Daggitt would not appear well explaining to his customers. "This is not honey *exactly*, neither is it exactly what-is-it. As near as I can figure, it is three-fourths honey and one-fourth what-is-it."

I suspect that something like one-third the entire storage of honey (and more in bad seasons) never distilled inside the corolls of a flower. I understand that large amounts

of honey are stored from cotton, and that the honey glands of cotton are mostly *outside* the corolls instead of inside. Yet our southern friends would buzz about Mr. Daggitt's ears had he power to prevent their product from being sold as honey. The cow pea of the south goes farther, and has its honey glands on nodes scattered all along the stem. What shall we do for our brethren who have cow pea honey to sell? Again, vegetable tissues not originally intended to secrete sugar often take that action by reason of wounds. Occasionally the stubble from which grain is cut, instead of dying, goes to work and secretes immense quantities of sweet. When soil and air are moist, and all circumstances favorable, wounds caused by insects, and especially those curious growths resembling fruits which insect wounds give rise to, put out nectar. It may transpire yet that half the honey credited to insects is only provoked by them, not secreted. Freezing and thawing also wounds leaf tissue enough to make it take this altered action sometimes, and the forest goes into the syrup business by the square mile, if I am not misinformed. Bees pay no heed to our quilets of definition. In times of scarcity they gather what they can. In times of abundance they discriminate *by quality*, themselves being judges. And in many if not most cases we cannot assort their production except by quality.

As for the minor points friend Daggitt makes, oleomargarine disgusts us because we cannot get rid of the idea that it had an unclean origin. This would not be the case with sugar-honey. The Wiley yarn took and ran in the newspapers like wildfire because people like to hear that somebody, especially a rogue, has accomplished something supposed to be impossible. Sugar-honey will lack that appetizing character. We shall soon find out what the newspapers will do: but I will risk the prediction that they will pay very little attention to the matter. I think I never called the elaboration of honey by the bee a digestion. Go for some other fellow. Sugar-honey can hardly be more destitute of aroma and distinctive flavor than some floral honey is. So I say, Brethren, let honey be honey. Let good be good. Let bad be bad. Let us all lub each other, and hab no trouble any more.

RICHARDS, Ohio.

March 10, 1892.

In Wintering Bees, Pure, Dry, Warm Air is Needed.—Securing it by Moving the Bees to a Warm Chamber.

C. W. DAYTON.



IF I WERE NOT afraid that my location would be overstocked I might say, to follow my example, by coming to Southern California, where cellars are not needed. For Iowa or Wisconsin (my former location) I think I could make nearly any cellar answer, with a little labor, for wintering by the plan which I give. A cellar where a temperature of 42 to 48 degrees could be maintained would suit, and I do not care what the walls and floor are composed of. There is a difference in the natural temperature or in the location of cellars that makes it necessary to use fire in one and not in another, and yet what should cause such a difference is difficult to understand.

As the bees are set in, spread over each hive, on the brood frames, two thicknesses of common gunny sacking and, as the hives are piled up solidly, lay laths on the lower hives to set the second tier upon. Leave the common bottom boards nailed on the hives but open the entrances full width.

Set the bees in the cellar about November 20th. I pay little attention to the weather except that the hives are dry on the outside and it is not cold enough to collect frost or moisture on the inside of the brood chamber or on the combs of honey.

After this arrangement, take care that the temperature does not get out of control. If it should go down to 38° or 40° for a few hours, it will do no harm, but it must not *stay there long*, as moisture condenses very rapidly. The temperature will naturally take care of itself except through an extended cold snap.

I leave the bees in the cellar until the 1st or 10th of February. Then there begins to be quite a few dead bees scattered about that befoul the air. The honey inside the hives, which is not in close proximity to the clusters is more watery than when the bees were

set in. Sealed, or unsealed, it becomes thinner; in the unsealed cells perhaps the more so. Sections of comb honey sitting in the lower part of the cellar will show it. All honey will deteriorate in consistency by the absorption of moisture and foul gases floating about. Allowing a tub of butter to remain in the cellar a few hours before taking it to a butter merchant will cause him to ask what else beside butter you keep in your cellar and he will pay you two or three cents a pound less in consequence. This indicates impure air.

From this date on I would make every effort toward a pure and dry atmosphere, and, in order to do this, after much study, labor and experience in the building and ventilation of several cellars, I have been compelled to forsake the cellar entirely and move the colonies to a repository entirely above ground.

To obtain such a repository I would choose a large room over a shop or other room where a coal fire could be kept constantly burning. Put in a lining of sawdust three or four inches thick to keep frost out on the sides, but have only a good floor overhead of matched lumber with unmatched lumber for the floor of the repository and let the cracks distribute the warm air which comes up from the stove. Beneath this floor, between the joists, may be a space of 8 or 10 inches in depth for an air chamber, below which is the stove room which is plastered overhead. At one side may be arranged a place to admit warm air from below and regulate and maintain the temperature of the bee room between 60° and 80°. I have never known the temperature to go too high in my bee rooms, but 60° is as low as I would want it to go. When the temperature is at 60° or 70° the temperature of the cluster is only about two degrees from it and is as high a temperature as will maintain the regular cluster. So long as the bees are *clustered* they will bear a light in the room, and when the quilt is lifted pay no attention to it, except when the air of the room is oppressively impure.

Before starting to move the bees from the cellar select a time when the temperature outside is about 25 to 30 degrees above zero and fill the cellar with this cool air for an hour or two. At first there will be some roaring but it will soon die down if it is night, and I should never attempt to move the bees at any other time than at night.

The prepared repository should remain cold until the bees are all in and there will be no waste of bees unless there are some diarrhoeic colonies, in which case some of the worst afflicted bees may scatter out, and would, if the temperature were 10 below zero, and if left in the cellar would be out on the floor in a few days. I usually prepare to make this change about the time I detect condensed moisture or the first symptoms of disease in two or three colonies, or when some colonies become a little noisy, and fresh air admitted into the cellar will not make them quiet so that a bee now and then flies out and only one or two come to the lamp at a time. If there are from two to fifteen bees at the lamp I should say that the bees either will be diseased soon or else there are non-porous coverings to the brood chambers. In either case they may last until spring, but will come out weak or get weak after being set out and it will be "nip and tuck" to get one-half of them ready to work in sections. One colony well wintered is worth a dozen such. They must be wintered well or they will not spring well, and upon the springing depends their deportment during the honey harvest. These items may apply in the case of 100 colonies.

As soon as they are moved, raise the temperature slowly to 65° and there will be the slickest job of house cleaning you ever saw. The dead bees and other refuse on the bottom boards will be carried out and deposited on the floor about eight inches in front of the lowest tier of hives and the water and mold that was on the bottom boards and combs will soon vanish. The stench that is characteristic in diarrhoeic colonies will cease, the bloated bees will be "evaporated down" to normal size and the bees in all the colonies will appear, and I believe they *really become* smaller than when they were in the cellar. In four or five days they will become as perfectly quiet as in any temperature, each bee standing motionless on the comb; but the clusters are not circular nor so compact as in the lower temperature, there are bees clear out to the corners of the hive and standing on the bottom board. If there is a hole in the covering some bees may come up and stand motionless there; a little lower temperature will cause them to move slowly down inside the cover and a still higher temperature will bring them up again as the mercury rises and falls in the thermometer. I keep them in this reposi-

ry a month or six weeks and then return them to the cellar and keep the temperature, as before, at 42 to 48°. While the bees are out the cellar is thoroughly renovated, a stove put in and hot fires kept there for several days.

There will be only a month or six weeks for the bees in the cellar, now, and during this time they cluster very closely. Large colonies roll themselves up into little balls and nuclei almost disappear, and you mutter, on searching downward among the combs, "just as I expected, nuclei ain't worth the setting in;" and were it not for sweeping the cellar would not be worth the setting out; and as you watch the bees climb the hive front and fill the air, (well wintered bees, as soon as their heads appear at the entrance, start up the front of the hive on a run and take wing as they run, poorly wintered ones try their wings on the alighting board and often run off on the ground) you think, "as the hive is now empty, I'll look in and see what has been done here in the way of brood rearing, or, indeed if there is any queen at all." As you raise the quilt hundreds rush out through your hands and fingers and fly around your face and you exclaim, "why how is this," and look around sharply to see if you are not examining a regular full colony.

Eight nuclei wintered thus came through surprisingly active and strong in bees, held their own through the spring and came up in time for the harvest, as I am told. I sold them early in May.

I have tried this method only three winters. Last winter with 40 colonies. The winter before with about one-half that number, and one other winter with four colonies. If long experience and many colonies is necessary to prove the method a good one, I refer to Mr. Ira Barber, of DeKalb Junction, N. Y., who has had abundant experience.

I once built a frost proof cellar 26x38 feet under a large building. Then another 8x30 feet in the center and entirely below the floor of the first one and with a foot of sawdust overhead.

This cellar contained from 75 to 150 colonies for four winters, during one of which the temperature remained constantly between 43 and 44 degrees.

Although I was enabled to winter the colonies with little or no loss in it the bees never had the *staying* qualities, either in number or tenacity of life possessed by the bees wintered by the high temperature method.

In winter bees should have as pure a place as is needed by butter all the time and their honey, hive and combs should have as dry a place as is required for comb honey, at least a part of the time; and no cellar is so for even a day. In Colorado were the dryest cellars I ever saw and they do not require to be walled, the earth in which they are built holding itself. These cellars wintered comb honey most wretchedly.

There is as much hibernation in a temperature of 65 degrees as at any other temperature, and bees maintain the cluster just the same. Eighty degrees and pure air is quieter than 40° and impure air. If they get noisy, always look to the purity of the air first as the cause. One caution is to maintain absolute darkness in the bee room. Next, after light, stray bees will seek warmth. If there is a stovepipe or radiator in the room they will go to it, so I placed a hive close by the pipe in one of my rooms to catch them. In four or five days I noticed the colony about half clustered around the end of the hive nearest the pipe. I drew the hive away and wound a strip of wire cloth around the pipe and set a section of honey close by and the bees soon all came out of the hive and clustered on the wire cloth. The hive was taken away entirely and the bees remained there in a pile for eight weeks or more when they were put in a hive and set out of doors. All the combs or feed they got was a section of honey placed down by them when needed. They made a good record.

Four colonies which wintered well and were in this repository with the rest of my colonies remained, together with four colonies belonging to a neighbor, in the neighbor's cellar from November 20th to February 7th. The temperature of his cellar was quite low, little above freezing. None of his colonies lived until April 15th. They (his and mine) were packed alike, fed alike, the hives were alike and the colonies were alike so far as I could see; only the temperature of their repositories being, for a time, different. My colonies wintered finely. I may say that temperature or moisture or confinement do not destroy bees, and I speak the exact truth, yet a high temperature may increase the circulation of air to carry away the moisture which would otherwise rest upon and sour the honey that would effect a rapid overloading of the intestines, bringing confinement into a position the most dangerous.

Hundreds of colonies which are enumerated as wintered, are, really, only enabled to

pull through a season of sickness of all, and death to many, while a majority of the failures ascribed to poor queens may, in fact, be only the effect of bad wintering upon the health and fertility of the best of queens.

PASADENA, Cal. October 5th, 1892.

[Several authorities recommend occasionally raising the temperature of the bee cellar as spring approaches, and I have no doubt that the removal of bees to a dry, warm, pure atmosphere, as was done by friend Dayton, would be as beneficial as he says it would, but, rather than be compelled to perform such a task, I would try *so hard* to have the food of such a character and air of the cellar so pure, warm and dry, that no temporary removal would ever be necessary.—ED.]



Raising Sugar Honey may be Honorable but it Looks Like a Leap in the Dark.

C. C. MILLER.



I have, more times than you would suppose, been asked whether my bees were making any honey while they were in the cellar. To such persons it would make little difference, in fact I think it would make no difference, whether I told them the honey I offered for sale was gathered from white clover or made entirely from sugar which I had fed them.

A smaller and more discriminating class have learned to believe that genuine honey can only be obtained by the bees from the flowers. That's one of the things we have to deal with, the opinions of consumers. If all were of the first class there would be little difficulty in the direction indicated, so far as prejudice of customers is concerned, and the only thing to be considered on our part would be the question, "Is it right? Is it profitable?"

I must confess that I do not know enough to answer. In a season when the flowers offer a bounteous harvest, it seems pretty clear that it would not be profitable to stop their working on that which costs nothing, (if indeed we could do so,) to fill up with that which would cost us money. It is not so clear, however, that it might not be a very profitable thing, when nothing can be had from natural sources, to provide a substitute, *provided* we could have a permanently continuous market at a sufficiently remunerative price.

As to the question, "Is it right?" there is greater difficulty in finding an answer. If upon feeding the bees sugar we obtain a product that cannot be distinguished from the best clover honey either by chemical analysis, taste, or its effects on the human system, why not use it instead, provided it can be had at a lower rate? Although some late disclosures point somewhat in the direction of showing that sugar-fed honey may be as good as that obtained from flowers, I do think we should be exceedingly cautious about coming to a definite conclusion in that regard, and I think there are not as yet sufficient data to warrant us in accepting any such conclusion as final.

Even supposing it is fully settled that feeding sugar makes good honest honey, will the general effect be desirable? There has been so much said about adulterated honey that quite a large sprinkling of the public have been taught to believe that honey obtained by feeding anything directly to the bees is nothing more or less than adulterated honey. It will take some time to educate that belief out of them. On the contrary, if we should offer such a customer some sugar-fed honey, and tell him it was just as good in every way, and had been proved so by the highest authorities, it would only succeed in making him feel a badly injured person, and he would take pains to tell all his neighbors of the injury, and make them wide awake to the danger of being imposed on. For in these things people go by their prejudices more than by their senses. An intelligent druggist once asked me to sell him some honey, as he wanted some that was pure. I told him he could get some from a grocer, a mutual friend, and being in the comb he could rely on it. So strong was his belief in the general adulteration of honey, that instead of my assurance making him satisfied, it only seemed to weaken his con-

fidence in me as authority in such matters. So we must figure on having to battle with a prejudice already existing, and sure to be fed by anything that lies in the line of previously conceived ideas of adulteration.

Then, suppose it is all clear sailing so far, and that there is no trouble in having every body believe that sugar-fed honey is all right, may not another danger confront us? Grant, if you please, that sugar, fed with a sufficient degree of slowness, and under proper conditions is all right, will it always be fed in just the right way? And where will you draw the line between that which is fed just right and that which varies just a little from the right thing, gradually on down to that which is stored so rapidly that it is simply sugar syrup? And when you find that there are all grades of it, and you can hardly tell t'other from which, what is to hinder the adulterator from coming in and preparing a syrup that shall beat some of that which the bees have handled? Then if you get up laws sufficiently strict to stop adulteration, will he not still have a good field in which to operate, by taking bee journals to prove that sugar syrup fed to bees is sold as honey, then with philanthropic honesty offering a well flavored syrup that he is candid enough to sell for what it is, assuring his customers that it is really better than anything that has passed through the dirty stomachs of the bees?

Now, although none of my fears may be realized, and although I must confess that I don't know such a great deal about the whole business, still, any move in the direction indicated looks to me very much like a leap in the dark, and I'd rather not jump.

MARENCO, ILL.

Nov. 5, 1892.

[I wish to add a few words to what the Doctor says of the ignorance of the public in general as to the source of honey. Only those who have exhibited bees at fairs have even a faint idea of the proportion of people who believe that, in some mysterious way, bees "make honey." That is, that it is some sort of a secretion. The stereotyped remark that the exhibitor of bees hears hundreds of times in a day is, "Oh, see the bees making honey!" When I first began exhibiting bees at fairs, I attempted to explain when I heard such remarks. When told that bees must have access to flowers in order to make honey, many will stare in an incredulous manner, as much as to say, "That will do to tell." Others will say, "Is that so? Why I didn't know that."—ED. REVIEW.]

Sugar-Honey is a Superior Article but the Results of its Production and Sale are Problematical.

G. M. DOOLITTLE.



HOSE having *Gleanings* for the year 1885, will see, by turning to page 123, an account of some experiments I made to see if I could not find something that would certainly prevent syrup, made for feeding

bees, from crystallizing. In these experiments it proved beyond a doubt that honey was the best, if not the only thing, which would effectually prevent feed made of sugar syrup from crystallizing; and, judging by the many letters which I get, some of the readers of the REVIEW may not know just the proportions which should be used for this purpose, hence I will venture to give the formula here.

Put 15 pounds of water into any vessel which will hold fifty pounds, and set the same over the fire. As soon as the water boils, slowly stir into it 30 pounds of granulated sugar, and allow the whole to come to a boil again. Now set from the fire and stir in five pounds of honey. After trying all kinds of honey which we have here, I cannot see that it makes any difference what kind of honey it is, or whether that honey is well ripened or not, as all seems to answer the same purpose. The above makes 50 pounds of as good feed for winter as anything which can be given to the bees.

When I gave this formula to the world, some one cautioned the bee-keepers of the land not to feed more of this than the bees would use up before spring, for if more were used it would surely be carried up into the sections the next season, and thus the bee-keeper would be selling "adulterated honey." I thought this was so far-fetched that I experimented further the next year, and fed one colony during the month of August on food thus prepared, feeding about five pounds a day, till this colony had a set of sections filled; and to another colony, which had empty combs given them, I fed syrup at the same rate as above, and when the combs

were capped over I extracted the honey (?) and wife and I had some of this adulterated stuff for ourselves and to set before company.

This was six years ago, and as I kept no memorandum of the matter, what I say will be from memory. Why I kept no notes regarding the matter was that such a hue and cry was made over the matter of adulteration, where even feeding was carried so far that some of the feed might remain over to the next summer in the combs, that I did not feel like standing the "storm" which would arise should I make the matter public. After some of my intimate friends had eaten of this sugar honey I ventured to ask them if they could tell me from what source it came, and I found that the five pounds of honey used to prevent granulation, so flavored the whole, that every one would pronounce it honey from basswood or white clover, just in accord to the kind I had used to keep from crystallizing, while all, without exception, called it the finest honey they ever saw or tasted. Not wishing to have it said that Doolittle was aiding the adulteration of honey, I let the thing rest where it was till last spring, when, out of sympathy for the Editor of the REVIEW, I expressed myself as siding with him, in a little note, which he saw fit to publish.

Now I am free to say that I consider sugar-fed honey just a little better than any other, and that I do not consider it adulterated honey by any means, but whether it will be the wise thing for the bee-keepers of the world to go into raising sugar-honey and putting it on the markets, is quite another question. At the present prices of honey and sugar, a specialist with the needed paraphanalia could produce honey at a cost much below the present prices, and the knowledge of this would cause other specialists to go into such production which would finally result in competition, and this competition would result in two things: first the building up of large "ranches," turning out thousands, if not millions, of pounds of honey; and, second, the lowering of prices to where the "little" bee-keepers could not make it pay to keep bees that they might gather honey from the flowers; for, if sugar-honey is to be the thing of the future, the "locality," the "seasons," and such things will play no part in the matter of "honey trusts" which will probably be formed, while they will be an important factor with us "little

fellow." Now I am not a prophet nor the son of a prophet, but I will predict that if sugar is ever fed in large quantities to bees to make into honey, that when that time arrives, there will not be 300,000 bee-keepers in America, as there are now reported to be. From the above reasons I am inclined to think that this present discussion of the subject will not be for the best interest of the bee-keepers, but if it should prove to be of the "greatest good to the greatest number," the apiarists of the country ought to feel to say amen, for do we not all belong to the great "brotherhood of man"?

BORODINO, N. Y. Nov. 10, 1892.

[In a little private note Mr. Doolittle adds the following:] I do not know that I have a private word to add on this subject of sugar-honey more than what I have said in the article. While I admit that all of the notions of the past have been illogical, yet I confess that a nervous anxiety steals over me regarding the future, when I contemplate what may be the possible outgrowth of agitating this sugar-honey matter. May Him who rules above guide in this matter.

G. M. D.



Feeding Sugar for Comb Honey.—Can it be Honorably and Profitably Done?

R. L. TAYLOR.



HERE can be no question that the feeding of sugar to produce comb honey would be honorable and legitimate if in disposing of it there is no concealment of the source of the honey. But how far is it necessary to go in order to satisfy this requirement?

Would it be sufficient to pack the honey without distinguishing mark and say to your commission merchant that it is made from sugar? That would leave the consumer, who alone is the one really interested, without any sure protection. You may say he is getting as good as he supposes or better, but he may reply that he has a right, with a full knowledge of all the facts, to exercise his own judgment. And one can hardly deny his claim.

I said the consumer alone was really interested. But I was hasty. I, we will say, make a business of producing for sale fine comb honey from clover and basswood only, but Tom, Dick and Harry start a business of feeding sugar and produce a counterfeit of my product and invade my market and tacitly sell their counterfeit as in all respects like mine. Would not I be injured? A little later it begins to be whispered that much of the honey sold in the market is not the genuine product of flowers. The community looks askance at me as I attempt to find sale for my honeys, sales fall off and the market price drops. Am I not unjustly damaged?

If the production of sugar-honey is to be undertaken largely I cannot escape the opinion that each section should be stamped sugar honey, at least until it wins a position equal in all respects to that from the flowers.

But all would not do that. The fact that the honey cannot be distinguished makes it all the more dangerous. It is indeed a difficult question and the result cannot easily be foreseen.

HOW WOULD IT AFFECT THE MARKET?

How the feeding of sugar for the production of honey would affect the market price is another serious question. If it should be found profitable and be largely undertaken it would be easy in the present state of things to overstock the market which with inevitable competition would, maybe, largely reduce the price, cutting down not only the profits of this but destroying also those of the ordinary apiarist.

On the other hand it may be that in time honey made from sugar would take first rank and be considered the most desirable of all honeys and possibly so increase the demand that prices would not suffer at all. These are knotty questions which experience alone can finally settle.

IS IT PRACTICAL?

It will be admitted no doubt that the great mass of bee-keepers could never be induced to think of undertaking such a business. One hundred dollars cash down for six barrels of sugar vetoes any proposition to move in that direction. A suggestion that fifteen dollars be used to purchase a barrel of sugar to prevent a risk of twenty-five or thirty colonies starving would scarcely be listened to, much less put in practice, less still would they think of spending money to feed the

bees to get them in good condition to gather the nectar when it should come, for, beside the money for the sugar, there are the stove, and the cans, and the pails, and the feeders, and the intermittent labor of adjusting the feeders, of boiling and feeding and then of gathering and putting away securely all the necessary paraphanalia. All this is too formidable for bee-keepers who are not specialists. Besides many of them sell good comb honey for ten cents per pound and when a "sum" is worked out to discover the margin of the profit, the matter is finally settled for them. This will be all the better for the rest, it may be said. But will there be enough left to make the business respectable?

CONCERNING THE PROFIT.

It is made a question, I notice, whether there is any certainty of a profit in feeding sugar for comb honey. The majority would fail, no doubt, as they would in any other given business. Would it be made profitable, and could it be made profitable, are different questions. To the former, generally speaking, "no" would be the proper answer, but the latter may require a different response. Into the determination of this many considerations must enter; such, for instance, as these: How many pounds of syrup of the weight of well ripened honey would one hundred pounds of sugar make? What proportion of this can be secured in the shape of comb honey? What proportion goes to produce wax? What to feed the bees? What into the brood chamber? And would a dollar's worth of sugar produce a dollars worth of bees? An intricate set of questions indeed which only careful experiments can fully answer. Under the most favorable circumstances consistent with the welfare of the colony (for I cannot think the editor's experiment cited in the October RE. VIEW could have been conducted with any regard to the prosperity of the colony).^{*} I have found that in feeding back honey one will get about three-fifths of the weight of the amount fed in comb honey, but probably on the average one-half would be as much as could be expected. Suppose now that the feeding were conducted on a scale large enough so that the cost of the comb honey produced, outside of the sugar to be fed,

^{*} The feeding was done by colonies that had been hived on six L. frames, and the brood chambers were not further contracted. The colonies were certainly improved both as regards populousness and stores for winter.—ED.

would be five cents per pound. Upon this basis let me venture an estimate:

30,000 pounds sugar at 5c.....	\$ 1500
This amount of sugar should make 40,000 pounds of syrup of the weight of good honey from which there would be produced 20,000 of comb honey.	
Cost of 20,000 pounds of honey, outside of sugar at 5c.....	1000
Total cost.....	\$ 2500
If this amount of syrup were fed to 200 colonies we find that each colony has made away with 100 pounds of syrup in wax making, food for bees and brood and for surplus stores. If this feeding be done at a time when the extra bees produced by reason of the feeding are valuable their value with that of the extra stores should be figured out of the cost. I think we may safely say the advantage to each colony has been five pounds of bees and ten pounds of stores. Say the bees are worth \$2.50 and the stores 50c, we have \$3.00 per each of 200 colonies	\$ 600
20,000 lbs. comb honey at 15c	3000
	\$ 3600
Net profit.....	\$ 1100

There are \$1100 profit to him who can keep down the cost and make use of all the results. But this is not a large class. Many claim comb honey costs them 12 or 13 cents per pound to produce. Very many others we know sell their honey at 10 and 12 cents per pound. Of course for neither of these classes can there be any profit.

SUGAR FOR BROOD AND WINTER STORES.

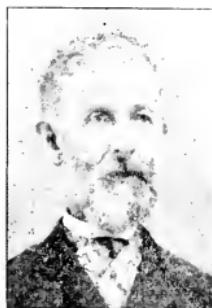
At the best, the sure percentage of profit in feeding sugar for comb honey is not very large. The extra amount of bees produced may prove of no value or even worse. [It is not necessary to produce bees unless one wishes, and the fewer bees produced the better the results in honey production.—ED.] And the price of honey, and especially of sugar honey, may go down so as to cut off all profit. The average bee-keeper, therefore, should be wary of the temptation to undertake the business. At least, let him make a safe use of sugar first. I suspect there is a much greater profit in feeding it for winter stores and spring brood. Colonies that winter well and are induced to rear a large amount of brood in May and early June seldom fail even in poor years to yield a large amount of surplus. So, at all events, before attempting anything more hazardous, keep the bees boozing from corn planting till clover blossoms, using plenty of sugar when necessary. If that should fail to be remunerative I should have little hope of the other.

LAPEER, Mich.

Nov. 11, 1892.

Sealed Covers and Cushions Keep in the Moisture.—Quilts are Better but Straw-board is the Best.—Hasty Conclusions.

B. TAYLOR.



FOR TEN YEARS previous to 1880 I covered my hives in winter, in the cellar, with board covers, raised slightly from the hives. I did this by inserting a thin piece of wood (1-16th of an inch thick) between the cover and the hive. I thought this necessary to let the surplus moisture escape. During those years I wintered my bees with little loss and the combs came out in the spring bright and free from mold.

About 1880 I began reading books that strongly recommended cushions three or four inches thick and filled with chaff. It was said that these cushions would prevent the escape of the heat and keep the bees nice and warm. I made some cushions in this way and gave them a fair trial, but they became wet and cold and proved expensive and unsatisfactory.

Thinking the retention of all the heat of the bees a desirable thing, I tried common straw board building paper for covering hives, using only one thickness, and that fastened down on top of the hives by making a frame of 7-8 square pieces of wood, the size of the top of the hive and fastening it on top of the paper with two screws. A piece of sheeting or burlap was placed under the paper to prevent the bees from gnawing the paper, and a thing similar to a Hill's device was put under all. My idea was that the paper would absorb all the moisture, and being so thin would dry out from the outside which was in contact with the air. Inch strips were laid between each hive as they were piled on top of each other. I was not disappointed, and after twelve year's use I can say truly that this is the cheapest as well as the best cover that I have ever used to keep the hives dry and warm.

I tried 75 quilts about as thick as a bed quilt, made with cotton sheeting and cotton batting laid between, stitched around the

edges and from corner to corner, and used in the same way as the paper. These quilts proved good, but not better than the paper covers, while they cost five times as much.

Notwithstanding my complete success with these covers, I was induced by the confident assertions of many so-called bee masters that solid board covers sealed down perfectly tight were not only less trouble but very much better than any thing else, that, in 1889, I prepared all my hives in that way. They came out in the spring in a worse condition than in the previous years. They were wet and soggy, the covers swelled, the nicely painted surfaces all covered with great raised blisters, and the combs in poorer condition than for years; and I said to myself that the big bosses should not fool me again. In this assertion I was just a little hasty, for they *did*. In this first trial I left the bottom of my hives the same as I had done with the paper and quilt covers, viz., with the bottom boards under them and the entrances left open the entire width of the hive. In 1890 I went back to my paper covers and came out all right again; but the leading bee journals continued to praise the sealed board covers. Books were published seemingly on purpose to introduce this great improvement in the safe wintering of our busy little bees, and I began to wonder why I had failed: for surely our favorite journals are not leading us astray. I listened to the bosses again and soon found why I did not succeed. I had not raised the hives from their bottom boards enough. Just raise them up all around or leave the bottoms entirely off and it will be all lovely. The Dadants and some others raised their protests against the thing and gave excellent reasons based on their experience; but we are all just about as lazy as we dare be and live, and are continually longing to reach the happy land without paying our passage, to reap without sowing, so I swallowed the bait again and prepared 100 hives with solid covers sealed tightly down. I put in a few with the bottoms left off but nearly all were left on their bottoms. The hives were raised from them all around and the combs raised two and three inches from the same. The result was the same as before. The hives were damp and swelled. The paint loosened from the wood. The combs were not, by any means, in as good a condition as I had been accustomed to seeing them. Many swarms were dead, starved

with plenty of honey in one side of the hive while the bees were on the other side.

With my quilts and paper covers raised $\frac{3}{4}$ of an inch from the top cases in the center of the hives, the bees came up and clustered against the warm dry covers and very seldom died with food in the hive. When taking the bees from the cellar, I have been in the habit of filling with sawdust the rims used to fasten the paper to the hive and leaving them thus until cold weather is well over. The rims were made two inches high for that purpose, and I suspect that it is nearly as good as regular packing cases: likely better, cost considered.

I shall not be caught in this foolish way again, even if all the bee journals endorse "solid sealed covers."

Mr. Editor, strange thoughts sometimes present themselves to my mind, and I query whether the bee journals have not done about as much to lead astray as aright. I do not say this in any spirit of hostility to my beloved bee journals, which I expect to take and read while I can read at all, I only suggest that they should be very careful to *know* that what they publish and recommend is *real truth*. After all our boasted improved ways, I am compelled, by the results, to know that we are not securing larger crops of surplus honey than the Germans and other careful workers did 30 years ago. This is a depressing thought, I confess. But is it not true? And take the matter of improved frames and hives: I have fairly tried nearly all the boasted improvements, and where a full sized brood chamber is used, I shall go back to the first frame I ever invented—30 years ago. I believe it is the best I ever knew, and in this idea I think I am supported by every person that ever gave it a trial. Now, truthfully, feeling that I have no better hive than I had in the long ago, and that got as large yields of honey then as now, I think the friends will pardon me for the suspicion that much of the great noise of past improved ways were but "sounding brass."

Notwithstanding all this, I shall continue to test new things in the apiary. Indeed I shall make a business of it: not for gain, but for pleasure, as I can get excellent pay for hard work in the satisfaction derived from finding out new things to a *certainty*.

Comments on a Beginner's Day Book.

No. 11.

E. E. BASTY.

H BELIEVE I managed to get through my second month of bee-keeping without any very serious "fool capers." Maladroit performances are not restricted to beginners by any means. There is a pathetic entry on my day-book which is certainly not so much as a thousand years back in the past, and which reads—

"Licked the Bingham & Hetherington honey knife 1 time. Going to do so more, 0 times."

For the benefit of any chance non-bee-keeping reader it may be remarked that the blood thirsty razor which Bingham puts out as a honey-knife has two edges. If you make a safe lick in one direction the unruly member is sure to sprawl off over the opposite edge.

"Nov. 6th, 1879. Finished taking off surplus honey. Total 675 pounds."

This seems small from 63 colonies: but as it was all comb, and the apiary had been run up to the number mentioned from 24 in the spring, it was not so very bad—28 pounds each, besides the heavy increase. At any rate I didn't do it, I only bought it. I did extensive figuring on this my initial crop to ascertain whether the blacks or the hybrids were ahead, and whether the Gallup frame or the Langstroth was more conducive to weighty results; but, as figures seldom do anything else but lie, I think I will not present my results. Finishing the harvest in November necessarily will look queer to some, but it's all right. The present year my bees seemed bringing in honey the last day of September; and I finished extracting Oct. 13th; but considerable of the honey was unsealed and too thin for first quality.

"Nov 12th. Finished painting ten chaff hives. Reconstructed a Gallup hive into a chaff hive. John highly approves—as I do myself. Mean to reconstruct them all."

Yes, paint your hives in the months when the bees let you have leisure—good plan. But, say, I don't know where my paint brush has gone to. I haven't seen it for many a year. I got to using bindings instead of paint; and the tooth of Time has gnawed my bindings off mostly. More recently I got striped building paper to bind things anew; but, alack-a-day, it stands in the shanty still, and has not been put on! What shall be done to the bee man that makes himself a warning instead of an example?

The reconstructed hives had the second wall of front and rear put on outside. One side was given a permanent second wall inside while on the other side a temporary second wall was to be used, located just to suit the size of winter chamber I wanted. These chaff hives have done tolerably well; but they have one serious fault, inch boards next the cluster on two sides. The experience of years has made me feel sound on one thing: the wall inside the chaff should be the thinnest film of wood that will answer and stand the knocks it will be subjected to. If inch boards get wet and soggy in winter, as they are liable to, they will not dry out till settled warm weather; and their sogginess sadly depresses the colony that must abide within a few inches of them. A thin wall quickly gets dry, when it has half a chance, at any season, and everything is "warm as a toast" again.

"Nov. 13th. Hauled three loads of sawdust from Albion's mill."

I was an enthusiast on the method of having each hive rest on a mound of sawdust, and continued so for most of my bee-keeping history; but of late I hesitate. It now seems to me that I should much prefer to have each hive on a piece of sawed stone flagging if the cost would admit. Certain insect enemies which I feel seriously apprehensive about would be badly bothered, I think, by putting the house upon a rock. The enemies in question may have taken passage to come to me in these identical loads of sawdust—if so I had rather the sawdust had been exported to "Pontiac." But when I get ready to open fire on these little, white, helpless-looking, harmless-looking villains I shall want more than the space of these comments.

"Nov. 25th. Mild day, thawing a little. Coat of paint on 14 reconstructed chaff hives. Packed for winter the first colonies, 12-6 and 12-7."

Theoretically it would seem that I have packed my bees for winter too late; but some how I have not yet been made sensible of it. My favorite style of packing moves half the colonies to a new location, and is thus ill adapted to be used until warm weather is over.

"Nov. 26th. Packed three colonies in one large chaff hive—raining part of the time."

Putting three children in one bed cold winter nights is great economy of comfort and heat. With bees, the details are a little difficult to arrange; and it makes lots of work, and opens chances to bungle things,

and do harm instead of good. The idea however came to stay, at least for a long time; but two colonies in a hive were all most of my hives were adapted to. And yet this present year I am letting each colony go into the winter in its own hive—not that I think it is better so, but that I hope that not very much will be lost by omitting the two and two arrangement. They have honey enough to winter singly this year, and some years they do not.

"Nov. 27th. Devised and made a sleeved veil, with cord at waist, cheese-cloth body, muslin sleeves, and face of Brussels net. Elastics were added afterward."

A "sleeved veil" eh? When we feel a little ashamed, how handy it is to use soft names. After awhile I got down level on the veracities and could call it unblushingly my "ku-klux robe." And when the cheese-cloth body proved too lazy for use I promptly made it a new body of firmer cotton cloth. For, dear brethern, I had rather put on a ku-klux robe three times than be dethroned by my little subjects even one time. At least I want the means at hand whereby I can hold the reins of power at all hazards.

But the incongruity of the thing! A sovereign making himself over into a walking bed-tick! What lack of perception of the fitness of things! What flavor of cowardice! Well, a sense of congruity, and a perception of the fitness of things are good possessions to have; but, say, aren't they a little scarce among the public? Let me digress and tell a story. I send for picture - cards for my Sunday - School occasionally. Children have an insatiable appetite for pretty cards; and it's nice to give a child a pretty picture, matched by a holy text. I have often been pained, and almost puzzled at the total lack of a sense of congruity in the setting of these pictures and texts—and this too on the part of artists who can do and do do very nice work. In my last lot one kind shows a bright girl aiming a snowball at somebody; and the text is "Pray without ceasing." Snowballs and pretty girls are dangerous things it would seem, and when they come skipping around a fellow he had best betake himself to his devotions. If the general public can tolerate such incongruities in greater matters I guess they can tolerate my robe—if I only wear it when nobody's looking.

In practical work I find about three legitimate places for the ku - klux robe to come

in. Two of them are in swarming time. When several swarms mix together in one great mass they sometimes become terribly infuriated, enough so to assault one by hundreds, and crawl right into all laps and pockets of garments. I for one want the means at hand of holding up my face to them. I wish to go ahead and put them at rights at once, and without being made a pin - cushioning of either. Another occasion for the robe is when hiving swarms at eventide. This I suppose most of you seldom do, but I very often. When I have several swarms to take from pits and hive the same eve there is liability to get a little belated. Bees under such circumstances are good natured usually; but the moment it gets just a little too dark they commence to alight on their keeper by hundreds, and almost by thousands. In ordinary rig it won't do to allow this; but properly robed one can in finishing brush them off his trousers, and strip the rest of them off over his head with the robe. But the principal use is the November service for which it was originally devised—packing bees two colonies in a hive in cold weather. Bees alighting on the operator in the course of this work directly become too much chilled to take wing again, and crawl in search of a warm place. Although they have no evil intents to begin with, the warm places are prone to get considerably warmer when a few dozen of them get within. With the robe I can work on half a day in comfort, without it the time would be passed in constant worry and petty torment.

RICHARDS, Ohio.

Nov. 1, 1892.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

TERMS:—\$1.00 a year in advance. Two copies, \$1.90; three for \$2.70; five for \$4.00; ten, or more, 70 cents each. ~~12~~ The REVIEW is stopped at the expiration of the time paid for.

FLINT, MICHIGAN, NOV. 10, 1892.

MINNESOTA BEE-KEEPERS will hold their fourth annual convention at Minneapolis, January 12, 13, 24.

THE PROGRESSIVE BEE-KEEPER will make its appearance January 1, greatly improved, so Bro. Quigley writes me. Good.

VERMONT BEE-KEEPERS will hold their eighteenth annual convention in Burlington, December 28 and 29. It looks as though they intended to take advantage of the holiday rates on the railroads.

SEVERAL ARTICLES on "Sugar - Honey" are crowded out. They will be given as soon as possible. In the meantime, if any one else has anything to offer on the subject, let it be done now while it is "in order."

WIRED FRAMES are opposed by Bro. Alley of the *Api*. I cannot help wondering if he ever hived large swarms on full sheets of foundation without wires. I have seen too many "messes" from such a proceeding to ever again wish to hive bees on foundation without wires in the frames.

THE COLOR of honey, whence comes it asks A. R. Killingsworth, of Red Lick, Miss. He asks still further if dark honey could not, by some means, be so clarified that it would become white. All of our beautiful white sugar was once dark, why can't honey be whitened out in a similar manner?

SWARMS will not unite in the air if no queens are with them, says Mr. Dibbern in *Gleanings*. Dr. Miller says they do in his yard, so it cannot be that all the bees in Illinois have that nice "go home" style that Mr. Dibbern's bees have. I have had swarms without queens go together in the air dozens of times.

ILLINOIS BEE-KEEPERS have not yet received any aid in the way of a small slice of the money appropriated by the State to make a showing of the State's agricultural products at the World's Columbian Exposition. So writes Secretary Stone of the Illinois Bee-Keepers' Association.

HOUSE APIARIES are pronounced by B. Taylor superior to any other method for keeping bees, either in summer or winter. He is so well pleased with the one that he has had for the past year that he will build a larger one next year. He has promised to soon tell the readers of the REVIEW how he intends to build it, and the reasons why.

MICHIGAN BEE-KEEPERS will hold their annual convention in the Senate Chamber, at Lansing, on Dec. 13 and 14, which is during the first two days of the meeting of the State Grange.

SULPHURIC ACID did not enable Mr. H. R. Boardman to get any wax from the residue left in combs that had been run through the solar wax extractor. The editor of *Gleanings* thinks there must have been some mistake somewhere and asks Mr. Boardman to send him two or three bushels of the "slumgum" that he may try his hand at the getting of wax from it.

ITALIAN BEES this year gave a surplus to Mr. W. G. Hewes, of California. His blacks have not gathered enough for their own use. Imported stock has given him better satisfaction than the golden strains of bees. He says the Italians would be much more generally kept in California than they are were it not for the difficulties in getting queens so far from the East.

LANGSTROTH REMINISCENCES.

Gleanings has commenced the publication of a series of articles written by father Langstroth. In these articles he gives sketches of his early life. The first time I met the grand old man was at the home of Mr. Newman in Chicago, where we both occupied the same chamber for several nights in succession. These reminiscences remind me very much of the long talks that we had when getting ready for bed at night and dressing again in the morning. Or, rather father Langstroth talked and I listened enchanted.

THE NUMBER OF QUEENS sold by the different breeders, as reported in the last REVIEW, was 11,715. Since that list was printed I have received the following additions:

Brown A. F., Spruce Bluff, Fla	536
Duvall C. D., Spencerville, Md.....	530
Laws W. H., Lavaca, Ark..	772
Flanagan E. T., Belleville, Ill.....	450

This brings the total up to 14,003. As there are quite a number of extensive breeders, as well as many small ones, who have not reported, I feel safe in saying that, in all probability the queen trade of 1892 was not less than 20,000 queens.

ARE QUEENS from the South more likely to produce bees that are "lazy" because bees in the South can get a living with less "hustle?" This is a question that is asked by Albert Sayler of New Palestine, Ohio. This idea has been brought up before. I have bought a great many queens from all over the country, and I have never noticed that locality played any part in the matter of the quality of the queens or that of their progeny.

—
WAS MR. CORNEIL'S ARTICLE IN THE LAST REVIEW MISLEADING?

Friend Hasty thinks that the article of Mr. Corneil in the last Review is likely to mislead some into thinking that his ventilating arrangement will actually *create force*. Here is what Mr. Hasty says:

"I think some will incline to chide both Mr. Corneil and the Review about that air-blast article on page 259. The doctrine of the Conservation of Energy is so universally accepted that it is hardly in order either to attack it by stealth, or to blunder into a contradiction of it. The energy of a blast can be *economized*; or it can be increased by drawing on some definite source of energy (as heat for instance) but it emphatically can *not* be increased by any mere mechanical trick. If it were otherwise the great old humbug of perpetual-motion motors would become an actual thing directly.

E. E. HASTY."

I know that Mr. Corneil is a great lover of the *exact* truth, and that he will always be willing to explain and defend his position or acknowledge his errors when they are shown to him.

—
THE NORTH AMERICAN CONVENTION.

The North American Bee-Keepers' Association will hold its annual convention in the city of Washington, D. C., sometime near the end of the year. The exact date cannot be given, but Mr. Frank Benton is watching, and others are watching for him, to learn when some other Society will meet in Washington, that the bee-keepers may meet at the same time and thus secure the desired reduction in railroad rates. As soon as it is known definitely when the meeting is to be held the announcement will be made. I have been thinking of late that it might be a good time to meet when it would be possible to take advantage of the holiday reduced fares on the railroads, that is, if we do not succeed in getting re-

duced rates at some other time; possibly it would be a good time anyway to meet. I should be glad to hear from others on this point.

—
HOW TO SECURE LEGISLATION FAVORABLE
TO APICULTURE.

Prof. Cook, in a late issue of the *American Bee Journal*, gave a most excellent article concerning legislation for bee keepers. In this article he advised the passing of rousing resolutions by Associations of bee-keepers, to the effect that the government ought to do more for bee-keepers. He also urged bee-keepers to write to the head of the Entomological Department, asking that bee-keeping be recognized.

As I understand the matter, there is a shortage in this department for the present year, and it is useless to ask for what cannot be granted. What apiculture needs, is a *Division* in the Entomological Department. This can be secured only through the action of congress. Then some member must be found who is willing to present the bill. After it has been presented, it must be looked after. The best man in the country should be sent to Washington to go before the committee and explain the merits of the bill and work for its passage. After the matter has reached this stage, then it would be a great help to have bee-keepers write to their members of congress. Money would be needed to pay the expenses of the man who should go to Washington. Where would it come from? I'll tell you what I think. The constitution of the Bee-Keepers' Union should be so changed that its funds could be used for *any* purpose for which it was thought best. Then money could be used to aid in securing legislation needed by bee-keepers. How bee-keepers would flock to the Union if its scope were only broadened so that every man who put in his \$1.00 would see some likelihood of his getting some real substantial return.

Of course, if the bee-keepers of a State desire their State Experiment Station to do something towards aiding the cause of apiculture, the matter should be brought before the Director of the Station.

Mr. P. H. Elwood is to bring before the Washington meeting of the North American, this subject of what the government ought to do for apiculture, and I presume that these points will all be given due consideration at that time.

IN WHICH DIRECTION OUGHT BEE-KEEPERS NOW
TO WORK TO BETTER THEIR CONDITION?

With the next issue, the REVIEW will be five years old, and I should like to close the year with a number that shall be unique. I have been thinking for some time that I should like to ask each of several of our best bee-keepers to write what he considered the *best article that he ever wrote*. Let each in his mind go over the bee-keeping of the past, see how it has progressed first in this direction then in that, met this obstacle then that, then consider the bee-keeping of the present, its needs and necessities, then try and give the best advice possible to give in a single article as to the course that bee-keepers ought to pursue in the future to make their pursuit more pleasant and profitable. After giving the matter sufficient consideration, let each write as though it were the last article that he expected to write—as though writing for a prize—and the best material must be used and put into the best possible shape.

In the past there have been what might be termed eras in bee-keeping. There was the invention of the movable comb hive, of the honey extractor, of comb foundation, of the introduction of the Italian bees, etc. Bee-keepers have had winter losses, foul brood, low prices for honey and poor seasons to contend with. Sometimes one of these burdens bears quite heavily, then it becomes less weighty and another takes its place. A few years ago the trouble seemed to be to find a market for our product. Several poor seasons in succession have removed that trouble most effectually, but the remedy is worse than the disease.

The point that I now wish brought up is in what field can bee-keepers labor with the hopes of securing the best returns? It is not at all probable that the poor seasons will continue. If they are to keep on coming thicker and faster, then bee-keeping must become an auxiliary pursuit, or we must raise sugar honey if sugar remains cheap, or something different must be done. There have been spells of poor seasons in the past, and then good seasons have come again, and, as history repeats itself, we may again look for good seasons in the future. There are, of course, locations where the natural honey resources have been removed, and old-time harvests need not be expected, but those localities that have failed simply from a lack

of the right kind of weather, or something of that sort, may look for good seasons again.

Taking bee-keeping as it is, what does it most need? Does it need better appliances? Shall we keep more bees and establish out-apiaries, or shall we keep less bees and do something else? Shall we enlarge or contract? Perhaps some will add "abandon?" If a man is to abandon bee-keeping, then he needs no more apicultural advice. If a man is to stay in it, what shall he do different than what he is now doing? My friend, from your experience and observation, please write the best article that you can that might be appropriately headed, "The Best Advice That I can Give Bee-Keepers."

Perhaps the views of the editor may be called for. They can be given in few words. In my opinion, the most promising field of labor is that of lessening the cost of honey. Honey is not a staple in the same sense that flour, meat and potatoes are. In proportion as prices of honey climb up, does the demand go down; and it is mostly in the devising of plans, methods, hives, appliances, etc., whereby the labor of raising honey may be lessened that bee-keepers must look at present for their success. The invention of the bee-escape was right in this line. Self-hivers are pointing in the same direction. What is needed is to be able to place an apiary out here a few miles, another out in this direction, another in that, etc., and then have matters so arranged that one man can care for all of them. Or these same methods must allow a man to have an apiary at home and be able to manage it by the use of a small part of his time, some other business taking the greater part of his time. I believe that it is in this direction that bee-keeping talent should turn its energies; now tell what *you* think.

All are invited to express their views on this question, and give the best advice that they can. It may not be possible to give all of the articles in the December number, but everything of value that comes to hand will be published as soon as it is possible to do so, and everything that is used will be paid for when it is printed.

SUGAR HONEY AND THE ADVISABILITY OF ITS
PRODUCTION.

I am proud of my correspondents. This difficult, delicate, tender subject of sugar

honey has been discussed with a coolness and fairness that is surprising when we consider the hue and cry that even its mention raised last spring.

In my mind there is no doubt that sugar fed to bees becomes honey. The nectar of flowers is almost wholly cane sugar. What difference does it make whether the bees get their cane sugar from the blossoms or from the juice of the sugar cane, evaporated and clarified and then made into a syrup? To be sure, the nectar of flowers has a flavor, but, as explained by Mr. Doolittle, in his article, this flavor can be easily added if desired, by the addition of a small quantity of honey possessing the flavor desired. Let no one fear that sugar will be fed so rapidly that it will not be changed into honey. For reasons why, read the article headed "How Bees Change Nectar Into Honey," to be found in the Extracted Department. Remember that Mr. Larabee fed twenty-three pounds of sugar in one night, yet the honey that was the result could not be distinguished by chemists, students or Cooks, from the best floral honey. By the way, there was an error in Prof. Cook's article last month. Where it said that Mr. Larabee fed twenty-three pounds of honey it ought to have said twenty-three pounds of sugar.

The question as to whether sugar fed to bees becomes honey needs no more argument so far as I am concerned. I believe that it is honey in its broadest sense. I presume that the majority of bee-keepers will think differently. We are so largely creatures of education, and have been taught to almost religiously believe that honey can come only from blossoms, that this belief cannot be gotten rid of in a moment.

As to whether it will prove profitable to produce sugar honey, is a question that is far from being settled. With my knowledge of feeding back, I can make it profitable, but as I have frequently said, the production of honey by feeding back, is as distinct a branch of apiculture as that of queen rearing, and must be learned before it can be followed with profit. The bee-keeper in a small way will seldom make a success of feeding back. There must be the tanks, pails, feeders, fires and knowledge of the business; these he will not acquire. The raising of sugar honey, if it is ever done, will be done by the expert specialist.

As to what effect the raising and selling of sugar honey would have upon the market, all that can be said at present will be simply speculation. The market will never suffer from the *quality* of the goods, of that I am certain. This is more than can be said of some floral honey. I once had 200 pounds of honey stored from boneset. It had a strong bitter taste. It was two years before I sold the last of this honey, and it would have been money in my pocket if I had never tried selling it. Many were the times that I was accused of adulteration by purchasers of that honey. Some are inclined to oppose the putting of sugar honey on the market, fearing that the increased quantity will lower the price. Planting for honey had the object in view, yet no one objected on that score. After all that has been said, however, I am not yet ready to advise everybody to go to raising sugar honey. I am rather inclined to agree with my good friend Miller, that it would be a leap in the dark. How it would affect bee-keeping I am frank enough to say, "I don't know." I think the advice of my neighbor, R. L. Taylor, very good. Use sugar for winter stores and for building up the apiary to get it in the best possible shape for the natural harvest, which usually comes. If it does not come and you feel like experimenting in a small way with the feeding of sugar for the production of comb honey, I see no reason why you should not do so; and if you choose to make known the result of the experiment you need not now fear, thanks to the courage of the REVIEW. I am aware that the raising of sugar honey is a new idea, or at least one that has never before been defended, yet I think it ought to receive careful consideration and cautious experimentation instead of being dismissed with a sneer or severe censure. As I have said before, try and lay aside prejudices and preconceived notions and let reason reign supreme. Remember: "He who cannot reason is a fool; he who dare not is a coward; he who will not, a bigot."

EXTRACTED.

Large Colonies Not Best for Winter in the South.

That bright lady bee-keeper of the Lone Star State, Mrs. Jenny Atchley, gives her

views upon the above subject in an article in the *Progressive Bee-keeper*. She says:—

“ While it may, and no doubt does, pay to have strong colonies in the North, it will not pay, as a rule, here in the South to winter strong colonies. Anything above an ordinary colony or about half a gallon of bees is wintered at a loss in the South, as a moderate swarm will build up sufficiently strong, long before the honey flow. It is worse than useless to have a powerful colony. The late Judge Andrews, of McKinley, who is high authority on bees, has well said that it was better to burn your bees off in the fall rather than have them hang around idle all fall and winter, using honey at a great loss to the owner. This I have found to be true in this country. We need the honey here, especially in the spring, but it is best only to have a fair colony of bees, a good queen and plenty of honey in Texas, or the Southern States.”

Large colonies are not needed here at the North any more than in the South, if the bees are kept in a warm cellar. Those wintered out of doors ought to be a little stronger to keep up the requisite heat. Strange though it may seem, a colony that is unusually strong all through the winter and early spring is not so likely to be strong and ready for the harvest when it comes. A medium colony with plenty of stores and a young queen, and well-wintered, is the one that may be looked to for profits.

The Crane Smoker Superior.

The Crane Smoker has been given a trial at the Root establishment, and a report of how it suited is given in *Gleanings*. By the way, I have sent my Crane Smoker to Mr. Bingham that he may examine it. Here is what *Gleanings* had to say of the smoker:

“ We have just been trying the new Crane hot-blast smoker, as recently illustrated in the *Bee-Keepers' Review*. From some tests we have made we are of the opinion that it is superior to any smoker ever constructed. It has the force of the cold-blast and the volume of the hot-blast very nicely combined. Mr. Crane authorizes us to say that the smoker will not be offered for sale until it has been thoroughly tested by a few competent bee-keepers, and its value determined.”

How Bees Change Nectar Into Ripe Honey.

Considering the special topic of this issue, I think the following, written by Mr. Doolittle about fifteen years ago, and published in *Gleanings* at that time, may be very appropriately introduced:

“ Our experiments have led us to the conclusion that all honey brought in from the fields by the outside laborers is given to the young bees, taken into their honey sacks, and if more is gathered than their sacks can contain, it is deposited in the cells till night, and then evaporated down; although the evaporation is going on to some extent during the day time. At night all hands join, from the outside laborers with jagged wings down to the bees but a day or so old, and the honey or thin sweet is taken into the honey sack, thrown out on the proboscis, drawn back in again and so on until by the heat of the hive these small particles of honey are brought to the right consistency, when it is deposited in the cell. In order to do this the bees hang loosely so that when the proboscis is thrown out it shall not hit another bee or the combs or hive. Many a night have we watched their operations, and by the light of a lamp you can see the little drops of nectar sparkle as it is thrown on the proboscis and drawn in again. When honey is coming in slowly you will not be likely to see this process. All, doubtless, have observed that when bees are getting honey plentifully it shakes readily from the combs at night, while in the morning before the bees go into the fields not a particle can be shaken from the combs.”

So many seem to have the idea that bees simply bring nectar into the hive and store it in the combs, and that it is then honey (?) and the bees have only to wait until it is sufficiently evaporated to seal it over, and then they are done with it. The truth of the matter is that the bringing of it in from the flowers is but a small part of the manipulation that it receives. Those who fear that sugar syrup may be fed so rapidly when it is fed to produce honey that it will not receive sufficient of the “ ferment” of the bees to change the cane sugar to honey, may lay aside such fears, as it is not simply while the bees are carrying in the syrup that the change is taking place, but during the manipulations that follow before it is sealed over. Readers will now understand why I believe that the extracting of raw nectar and evaporating it by artificial heat results in a “ something ” that has but *little* more honey about it than has sugar syrup that has not been fed to the bees.

Desirable Features of Narrow Sections.

I have used several thousands of sections that were only one and one-half inches wide. Straighter combs are secured, if no separators are used, and the honey is sealed over sooner. The honey also meets with a more ready sale for the reason that a thin comb is

more attractive, that is, it looks bigger, and this helps retailers in making sales. As an offset, the sections and foundation cost more. A correspondent of *Gleanings* reports to that journal how this matter was looked at by some of the members of the Iowa State Bee-Keepers' Association. Here is the report:

"This question came up twice at our State convention, but no discussion on the subject was made. Eugene Secor thought that wide sections are not capped over as soon when nearly two inches thick—a thing of considerable importance—while W. C. Frazier felt quite sure that eight to the foot would be the nearest right. D. Benton, my neighbor, uses seven to the foot, and I feel sure that his sections are capped sooner than mine, which are 1 $\frac{1}{2}$ inch, and do not stand so much in need of separators as do mine; and if sections were eight to the foot would they not be built much straighter, and be ripe and capped nearly as soon as built? To be sure, if full sheets of foundation were used this would be one point against these very narrow sections. I think that quite good combs might be built in them by using starters only; but I presume that the untasty drone comb would, with the latter plan, be built. The grocers here will pay only ten cents apiece for sections of comb honey; and if they were built eight to the foot then we could sell our honey at home at a fair profit—about as good as 15 cts. per lb. I know it has been claimed that it would not be an honest pound: neither are 1 $\frac{1}{2}$ sections an honest pound; and I can see no dishonest act about selling sections by the piece. I have spent much thought on this matter, and I hardly know which would be the best for us.

FRANK COVERDALE.

Welton, Ia., Oct. 11.

The editor comments as follows:

"We can't discover that there is any cheating when honey is sold by the section. If you can get more money for narrow sections, use them."

• • •

How to Decide Upon and Secure the Right Degree of Heat in the Bee Cellar.

Dr. Miller gives some most excellent advice upon these points in an article contributed to the *American Bee-Keeper*. His hints are timely and I reproduce them with pleasure:

"Last winter was milder than usual. It seemed warm enough during the fore part of the winter without any fire in my cellars, and I thought that I'd see how the bees would come out not to have any fire all winter. I doubt if I'll ever try the experiment again. From pretty well toward 300 I came down to 128. To be sure they didn't all die in the cellar—indeed the larger part of them died after they came out of the cellar, but I suspect they were weakened by being some-

what chilled in the cellar, and consequently couldn't stand the remarkably severe spring and early summer as well as they otherwise would have done.

Now I don't pretend to say that every one should have fire in the cellar. I have some faint hope that some day I'll have a cellar so warm that I'll not need to have fire. But I do believe that by some means the cellar, if a cellar is used, should be kept from getting down below 40° or 45°.

And it will not do for me to go entirely by what some one else finds the right temperature. For one thing, thermometers vary—sometimes five or ten degrees. So if I have a thermometer that registers five degrees too high and yours registers five degrees too low, and you try to keep your cellar at the same temperature as mine, there will be an actual difference of ten degrees. Then again, cellars differ. I'm not certain that I fully know just why, but there's a difference. A dry cellar doesn't need to be kept so warm as a damp one. Don't you know that on a morning in early spring, when the surface of the ground is frozen up, you feel quite comfortable, and as it begins to thaw you feel more chilly? The damp air is a better conductor than that which is dry.

Start with the theory that some where about 45° is the best temperature for a cellar, but don't stick too close to that theory. Watch closely, and find out whether your bees seem more quiet and comfortable when the thermometer goes above or below that point.

If you can get along without fire in your cellar do so. Some come down severely on anything of the kind, saying it isn't natural, and it's injurious to the bees. Well, bees are just like other people. They're better without fire if they don't need it, but it's a good deal better to have fire than to be chilled to death. I have used an oil stove in the cellar, but I shall never do so again. Of course an oil stove would be all right if there were a chimney to carry off the smoke and foul gases. [That's the way I shall use mine this winter if I need to use it. I shall run the pipe up through the floor and connect it with the pipe of my coal stove.—ED. REVIEW.] The heat from an oil stove is all right, but they are generally supposed to be used without any kind of a chimney, and that's what makes the mischief.

The stoves I use are small cylinder stoves, and with anthracite coal a low, steady fire can be kept up all winter. It is quite easy to regulate the matter by means of cleaning out the ashes more or less closely, as also by limiting the amount of coal put in each time. Attention to the fire each morning and evening is all that is necessary.

But your cellar may be of that sort that only occasionally becomes too cold, and it is not worth while to keep a stove in it. In that case you may carry down heated stones or jugs of hot water. Be sure your water jugs are tightly corked, for steam escaping from them is very undesirable. Wherever the climate is cold enough, every family ought to have a rubber water bag, or one or more soapstones. These will do good service in helping to warm the cellar. Of course bank-

ing the cellar is one of the cheapest ways of keeping it warm.

If you have only a very few bees in the cellar, it is not so important to have the cellar just right. A few bees will winter all right in a cellar where they might die if there were ten times as many. Perhaps it may be because the air is more pure.

I know there are some that say bees do not require ventilation, but you may set it down that anything that breathes requires air, and bees breathe all winter long. And on that account I am very sure that warming up a cellar sometimes does good, even when the bees are plenty warm. I once helped my bees when they were warm enough by putting fire in the cellar. I'll tell you how it was. It was toward spring, and one of those continued warm spells came when the temperature out doors went up to 50° and the cellar was the same. The bees became very uneasy. I started a fire in the stove and run the cellar up to 70° or more. Just at first it didn't seem to do any good—made them noisier, if anything. By the next morning, however, when the thermometer had gone down again to 50°, the bees were nice and quiet. I think the explanation was that heating of the air had set up a current, the air was changed, and with more pure air the bees were all right.

I have often noticed the same effect in a little different way. In a warm spell in the spring, when the bees became uneasy in the cellar I would at night open wide all doors and windows. How the bees would roar. At first it fairly frightened me to find them so noisy and crawling all over the hives, but by the next morning they would be quiet and nice, so that the sun might shine into the cellar without disturbing them.

With plenty of good food, plenty of bees, plenty of good air, and not too far from the right temperature, there should not be an over amount of anxiety about bees in winter quarters.

MARENGO, ILL."

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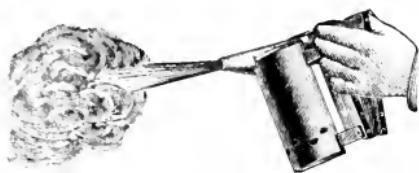
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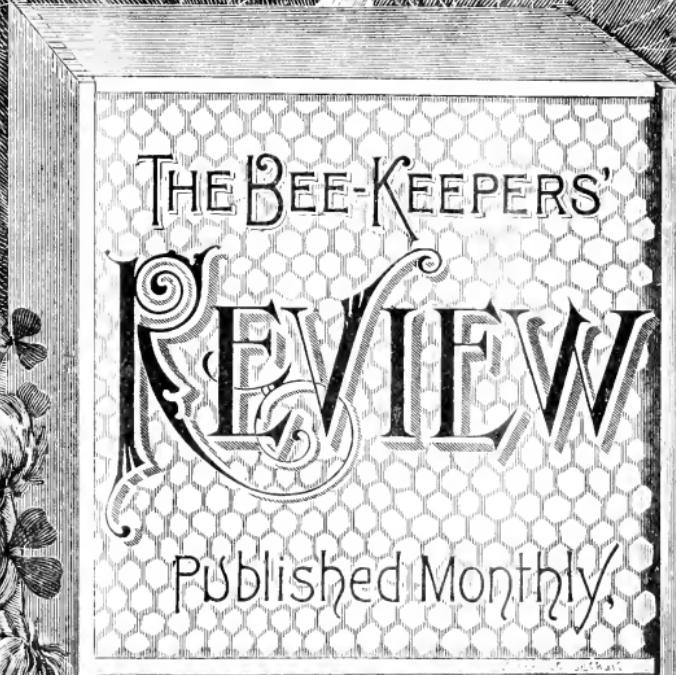
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DEC. 10, 1892



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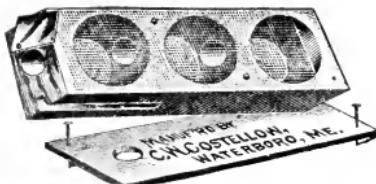
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And the **BEST** in the Market.
Also **DOVETAILED HIVES**
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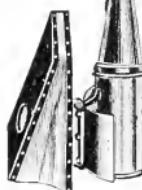
WATERTOWN, Wis., Jan. 1, 1892. 12-91-12

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Pat. 1878; Re-issued 1882. Pat. 1892



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4-92-tf
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Our goods are known as the best throughout the United States and Europe.

Write for free, illustrated catalogue and price list.

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Only \$2.60. Bingham Smokers at Cost. Free Price List
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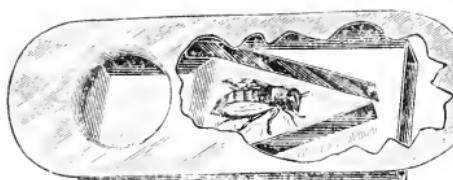
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PRICES: Each, by mail, with full instructions, trial, they are not found superior to all other escapes, and satisfactory in every way, return them and we will refund your money. For sale by dealers.

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Saves temper, time and bees.

PROF. COOK says: "No bee-keeper can afford to be without them."

WM. M'EVOY, foul brood inspector of Ont., Can., says: "They should be used in every bee yard in the whole wide world."

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What others say of them, 20 c's. Per doz., \$2.25. If, after three months' trial, they are not found superior to all other escapes, and satisfactory in every way, return them and we will refund your money. For sale by dealers.

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The Bee-Keepers' Review.

A MONTHLY JOURNAL

Devoted to the Interests of Honey Producers.

\$1.00 A YEAR.

W. Z. HUTCHINSON, Editor & Prop.

VOL. V. FLINT, MICHIGAN, DEC. 10, 1892. NO. 12.

The special topic of this issue is

Best Articles From Best Men.

That of the next issue will be

Miscellaneous Matter.

Bee Keepers Must Expect Only Health, Happiness and a Comfortable Living.—Out-

Apries Run for Extracted Honey a Move in the Right Direction.

G. M. DOOLITTLE.



"In which direction ought bee keepers now to work to better their condition?" is a question asked in the last REVIEW, and on this subject I am invited (with all the rest who write for the REVIEW) to write the best article possible,

"as though it were the last I ever expected to write." Well, let's see! If that comet, which the papers say is approaching the earth at the rate of a billion of miles a day, strikes us, surely this may be the last article I may ever write, and if so it should be my best. But what do you mean, Brother H., by "better their condition?" If that comet is to strike the earth, there is only one thing to think of regarding a better

condition: the one thing which we all should have thought of long ago, and that is, "Am I prepared to inherit *everlasting life*?" With the command "Seek first the kingdom of heaven," handed down to us by the Savior of men, how many ought to have heeded and been prepared for that *kingdom*, especially as we must soon pass hence, whether the comet comes to us or not. And this brings me to the main point I wish to dwell upon in this best (?) article.

Every one, or nearly so, seems to have gone crazy over the dollar and cent part of our pursuit, as though that was the acme of our existence. It is reported that Astor once said to a man who was envious of his fortune, "Would you take care of what I possess for what you want to eat, drink and wear?" "No!" was the response. "Well," said Astor, straightening up, "that is all I get." "But," says one, "I am anxious for my children." Is it any worse for your children to toil for their living than it has been for you to do so? Let me change that. Would you deprive your children of the keen enjoyment you have experienced in building up a home of your own, by giving them one already built up? "Lots of money" does not bring happiness; on the contrary, it often brings discontent, and if given to one who has not earned some money for himself, as a rule, it spoils the usefulness to the world of one who would otherwise have been one of the "pillars" in the community in which he lived, and in the nation. If we as bee keepers can secure to ourselves a comfortable home, though it may be humble,

from our bees, together with something to advance Christ's kingdom on the earth, according as he blesses and prospers us, and with this be content, we may enjoy a little bit of Paradise this side of Jordan. No pleasure has ever come to me like that which has come through success, at last, after working patiently and perseveringly over some problem which has confronted me in life, whether it was about the bees or the building of a home, or trying to elevate mankind. He who is not willing to work patiently till success crowns his efforts, and in that patient work realize the truest enjoyment, is not the one to be of the greatest blessing to the world. Nearly all of our great men, who have lifted communities and nations to a higher plane, have come up from the humblest homes, through patient toiling, studying hard and faithfully, perchance by the light of a pine knot, because poverty so pinched; or perhaps worked at the forge and studied at the same time, because too poor to attend an academy or college; or, like Cary, fit himself for a great life of usefulness while working on the cobbler's bench, as the case may be.

Not long ago, I received a well written letter, as compared with most of the type-written letters which I receive, from the editor of the REVIEW, and in closing he asked me to excuse the blunders in it, as he had written it with one hand while he tended the baby with the other. How many of the dunces and "calamity howlers" in the land would have done this without saying something about "bettering their condition," if they were to write under such circumstances. Yet in this patient perseverance, under any circumstances, I can see why the REVIEW has risen to the high plane which it enjoys amongst the bee literature of the day, and also, an enjoyment to our friend, brother, and editor, which he could not possibly enjoy had he been "cradled in the lap of luxury."

Supposing the bee keeper does not live as well as a Gould or a Rockateller, he has the pure air, the sunshine, and honest and honorable enjoyment, and as a rule gets a comfortable living, which may be enjoyed far more than the life of a gourmand. If any bee keeper is not satisfied with his condition as it is, let him spend the days not required with the bees in carrying mortar with a hod to the top of some three or four story building, receiving as pay from one dollar to twelve shillings a day and board himself, as

thousands are doing, (and being happy at that) and he will come back to bee keeping and thank God that He blessed the world with the little busy bee, even if we have now and then a poor season. From the above, it will be seen that I consider "the best returns for the bee keepers' labor" comes by raising our pursuit from the groveling idea of only a dollar and cent affair, up to where we shall appreciate it as one of the grandest pursuits along the road of health and happiness, which God ever gave to man. And to the question "Taking bee keeping as it is, what does it most need?" I answer, a man or woman who can see the heights and depths, the lengths and breadths which are possible to be attained along the line of intelligent thought, enjoyable health, and a pursuit which brings happiness, even though we be considered the poor of this world. This I believe is "The best advice that I can give bee keepers" under existing circumstances; that God may prosper us, so that we may have more to use in lifting up the fallen, and in bringing comfort to those who are cast down, as well as to spread his kingdom in the world.

I am convinced that placing out-apiaries about the home yard and working them for extracted honey tends more toward success, along the financial line, than any other plan. This I say after having an out-apiary for the past three years. Why I say run this for extracted honey, is that if worked on the tiering-up plan there will not enough swarms issue to pay for looking after, and if the honey is all left on till the season is over, little time is required at the out-apiaries during the swarming season, so that the home apiary can be worked for comb honey. By placing this thoroughly sealed and ripened honey, taken off after the harvest is over, near the ceiling of a warm room for several hours, it can be extracted as easily as when first sealed, and a quality obtained not obtainable in any other way.

BORODINO, N. Y.,

Nov. 23, 1893.

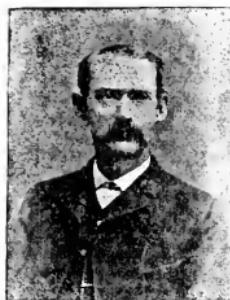
[Well done, Bro. D. If the above is not the best article you ever wrote, it is certainly one of the best. Although it was intended to discuss the subject from a practical standpoint, as you have done in your closing paragraph, yet it is well for us to remember that money-making is not all of life; that health, happiness and correct views of life are of far more importance. A man who

follows bee keeping simply for the money that he can make, will not follow it long.—ED.]



Proper Hives, Appliances and Methods will Make a Success of Bee Keeping in Nearly Every Season.—Why Adulteration Has Not Injured Bee Keepers.

JAMES HEDDON.



MY OPINION is the same as yours in your leader, but if I hadn't publicly expressed the same in my book, "Success in Bee Culture," my circulars, and in bee journals, I wouldn't say so, just immediately after you. I have not only publicly expressed myself as to what to do, *but I have done it*. Six poor seasons in succession, the whole not averaging more than one-fourth crop each, and yet my two apiaries containing about 250 colonies, spring count, have paid me a good and satisfactory income for the labor performed and capital invested. No, not wholly "satisfactory," for I am anxiously looking for that turn of the tables you mention, and although it lingers long I am sure it will come. Although these one-fourth crops have paid a good interest,—risk and maintainence not overlooked,—nothing short of a good average crop is fully satisfactory.

As you well know, I have grown up in the bee business; have followed it as a specialty, a leading business, for a quarter of a century. That business purchased my \$3,000 stock in our electric light plant, my newspaper, worth \$5,000, (have refused \$4,500), my outlying city lots, and other good property, and a good living, with some luxuries on the side, and nearly all from the sales of honey. I do not expect to "abandon" the business while I still have the cheerful habit of residing in this world, not because of associational attachment, but because I fully expect to make it do in the future all that it has done in the past, and perhaps more. When my labors are finished, I hope and expect that one of my sons will keep the old mill grinding, though perhaps by proxy, as a side

issue. While both are now studying professions, both know what I have done, and how to do it. I have the field by right of priority and virtue of tact, and this heritage I feel sure my children will hold after me. Oh this "bug business," as it was contemptibly called by my neighbors when I first embarked in it, (as a specialty) is a great business, I think, when rightly managed. From my book, (*Chapter on Hives*), published seven years ago, I quote the following which I deem pertinent to the well selected theme of this issue:

"'Necessity is the mother of invention,' it is said, and the great influx into the business of honey production, causing decline in prices, necessitates the use of such implements and methods—especially in hives—as will give us the greatest amount of surplus honey, for the amount of capital and labor invested.

"Some of us have grown from boyhood to manhood, hand in hand with this pursuit, and while we are often complimented upon our thorough knowledge of the business, it is usually forgotten that we have as signally failed to become skilled in any other branch of industry. Such is the case, however, and after the best part of a life-time has been spent in any pursuit, when that pursuit languishes, circumstances tending to make it less profitable, the wise do not hastily desert it, adopting a stranger, but work the more persistently to counteract the detrimental influences, by bringing every possible advantage to bear upon the business."

From my circular of three years ago I quote as follows, just what I as fully believe to-day:

"If we reason together, we will see beyond all doubt that apiculture, like any other business, must seek its level and when that level is reached, like all other lines of business, those engaged in it who produce at minimum cost will succeed, while those who produce at maximum cost will as surely fail. In the pursuit of apiculture there is need of capital, intelligence, both physical and mental activity as well as industry and tact. I found it very easy to make money out of the business in my earlier engagement in it, when honey sold for double what it now brings, but when the price was cut in two, a different phase was put upon the business, and it became necessary to produce much cheaper in order to realize a good profit. This necessity was at once the mother of invention, and after perfecting various other minor implements and arrangements about my apiary, I began studying upon hives, knowing full well that within the construction and manipulation of hives there rested that rigid economy which would still make apiculture profitable."

No, after all these years, after long ago making myself obnoxious by opposing the urging of everybody with the bee business, and persisting that honey was not, and never

could be a staple, it turns out that I was correct, although the truth was not the most acceptable to my co-laborers. To following what seemed to be bold facts, rather than pleasant theories, do I credit much of my success as a honey producer. If "oil-finished" facts are against me, the sooner I "know and own and feel it," the better I can meet them and offset their pernicious influence. Nothing has so damaged our pursuit, and so injured its followers, as the writings of those who wrote themselves to fame by writing UP the business rather than telling the plain truth about it. "How I secured 200 lbs. surplus per colony," and "How I sold my entire crop (which was probably about 30 lbs.) of honey, for 40 cents per lb.," and all such slush, most of which was more or less fabulous, has worked great injury to the business and its devotees.

As to helping out by adopting other business, do this only when this other business is to be the side-issue, and apiculture still the specialty. You know that I can devote side attention to electricity, and on that subject give my advice to our paid manager and draw my dividends; advise and direct my hired editor and make my paper pay, but all this time BEES and their product is my main work and line of thought, and wherever you learn that apiculture has become a side issue with me or anyone else, you may surely look for another departure from the business. Our calling is one which is in no fixed groove, and one which will not bear our desertion from all its details. You say what I have many times said, in articles in past bee journals, and which I have not the time to look up now, that we must look to short-cut plans, methods, devices, and implements, and you very correctly place first importance on the hive. Most hives are good for bees, but few are fit for *bee keepers* who hope to produce honey at a profit at present and probable future prices.

Don't worry about adulteration, for no bee keeper who can produce honey at a profit at present prices can afford to adulterate; he can and must produce the pure article at less cost. The adulterations of city dealers have never harmed us at all. Neither consumers or expert chemists have been able to tell the straight from the mixed article. A northern Michigan bee keeper was prosecuted for selling adulterated honey, because the stuff was so high colored and pungent. But it turned out to be pure and the innocent

bee keeper was acquitted of crime, but convicted of trouble and lawyer's fees. Chas. F. Muth's honey was adulterated because he lived in a big city, said the chemists at Washington, but we know Mr. Muth, and all know, and still know better. Most of the adulterators of the past have concocted a wholesome and attractive article, attractive both in appearance and taste, and pushed its sale with a vigor which more than made up for the increase in quantity, so far as damaging our interests is concerned. Nearly all that work is past, and the first big crop we bee keepers get will end all that is left. The recent short crops may have caused some city dealers to stretch out their stock of honey by the mixture of sugar or glucose in order to supply a demand previously worked up when honey was more plentiful, and it is directly to our interest that such demand should be kept supplied to keep it alive and growing. The few samples of these mixed goods which I have seen have been fine, and not by the quality did I suspect they were not pure honey of fine quality, and I can truthfully tell you I am a judge of honey. I have had every opportunity to become such. But some will say that we should fight glucose on the grounds of its not being a wholesome diet. I don't believe it is unwholesome, but if you think so, and desire to become a philanthropist and martyr, go for it where it is used *one hundred times more than with honey*, in cane syrups and confections. In these it must be making terrific ravages upon human life. Attack it there and save *prejudice* against our product. There are lots of other points pertinent to this well selected topic, but this essay is long enough.

DOWAGIAC, Mich.,

Nov. 21, 1892.

[Let no one imagine our Dowagiac friend is defending adulteration. As I understand him, he thinks that adulteration has done bee keepers no harm, while the everlasting talk about the matter *has* done harm. In my opinion it would be better if honey had never been adulterated, but most of the methods that have been used to stop it have simply called the attention of the public to the matter without stopping it. This is certainly poor policy. This subject was once quite thoroughly discussed in the REVIEW, but if any one wishes to show where Mr. Heddon is at fault, its columns are open.—ED.]

Bee Keeping Needs Carefully Conducted Experiments Conducted at the Expense of the Government.

C. C. MILLER.



WHEN I first read your leader, Mr. Editor, I understood you to say that you wanted to be told what each one considered the best article he had ever written. Then I began thinking over what I had written. "Legislation for bee keepers?" No, that

wasn't good, for it was written in advance of public opinion. "Feeders?" No, for I tried to tell an editor about some of the advantages of the Miller feeder, and he told me that it had the disadvantage of needing a cover in addition to the regular hive cover, and some other things that didn't belong to the Miller feeder at all, showing that I couldn't write on that subject so as to be understood by one of the brightest men. Then I thought over other things, and began to be all in a muddle, when on reading a little farther I found you didn't mean anything of the kind. Instead thereof, you want the very best advice that can be given to bee keepers.

As I am to "write as though it were the last article," and to give the very best advice I can, I should say, first, foremost, and above all, be a thorough and through Christian man or woman, and then do all the good you can in whatever line opens up to you. Don't make the serious mistake of supposing that if some other opportunity were given you that you could do more good, but settle it finally that you are one of the fortunate ones that have struck just the right place to fit you, and be very happy over it.

While doing that it is quite important that you should be doing something that may keep the wolf from the door. I understand that you are a bee keeper, but am somewhat, or rather entirely, in the dark as to particulars, and all I know further is that you want some advice. Striking at random, then, I will say, if you entered bee keeping solely for the money that's in it, without any liking for the business, get out of it just as quick as you can. As you are so often told, there

may be good seasons come that will make up for the bad ones. Yes, and there *may be* a continuance of the bad ones. But suppose good ones come, and the next twenty years shall average just the same as the last twenty, then I think you will be told by any intelligent bee keeper familiar with the facts that if the same amount of zeal, energy and brains that have been expended in bee keeping in the last twenty years had been devoted to almost any other line of business, or had been divided up among all other lines of business, the owners of the energy and brains would have had more money in their pockets.

So, if money is your god, get out of bee keeping. But if you set the right estimate on the value of health and happiness, and have a taste for bee keeping, then it may be that in caring for the busy workers you may find a richer reward than in some other business that would put more money in your pocket.

The editor gives the general advice that you must lessen the cost of production. Good advice, providing the price you get is not lowered in like proportion. Even then, I should favor the lessening of cost, for if it doesn't do the producer any good, it will the consumer. But do all you can to keep prices from being pulled down by false representations or false impressions getting among consumers. And I have my fears as to the outcome, when in our own ranks propositions are made that may be construed by the newsmonger to mean that the honey of the present day is not the honey of the past.

But now as to keeping down expenses. To be of any value in that direction, advice must be, not general, but specific. I might give a good many items, by saying clip your queens and save the work of chasing after swarms; have top-bars $\frac{7}{8}$ thick with $\frac{1}{4}$ inch space between sections and top-bars, thus saving the muss and trouble of burr-combs as well as the expense of honey boards, and so on. But I think I'll confine myself to one line that I am afraid will be neglected by others.

To put it in a few words, don't take all the profit out of the business by making experiments. Experimenting has cost me hundreds of dollars, and I'm sure I'm not alone in that. But are we to have no experiments? Surely, but for the spirit of experiment, the science and art of bee keeping would not hold the advanced ground it occupies to-day.

So we must have the experiments, but they ought not to cost so much. How shall expense of experiments be kept down? For one thing, make them on a smaller scale. We lie awake nights thinking over some new fangled notion, and we think it all out, sanguine that it will be a success. But past experience tells us that it is a low estimate to say that in nine cases out of ten the old is better than the new. Yet the very next experiment you make, you will feel so sure that *this time* you are on the right track that instead of trying your experiment on one or two colonies you will make every colony in the apiary suffer. So it will keep down expenses if we experiment on a smaller scale.

Now I want to make a plea for doing away entirely with nine-tenths of the experimentation, yes, ninety-nine one-hundredths of it, and yet at the same time have fuller, fairer and more satisfaction and conclusive experiments. You will understand in a word what I mean, when I say that in every state there should be experimental stations for bee keepers just as there are now for farmers. The Hatch act gives to each state \$15,000 to be used in aid of agriculture, and if bee keepers will unite to ask for it, and persist in the asking, I see no reason why a reasonable share may not be devoted to them. The State Society of Illinois has set the example by asking an appropriation, and naming our good friend, James A. Green as the man to use the money. They may get what they ask for, and they may not. But they are not likely to get it without asking, and if they fail to get what they ask for now, they are more likely to get it next time because of the past asking. There will be a gain if the bee keepers of each state put in their petitions. The very fact that other states are asking the same thing would help the Illinois men to gain their point. And then the fact that Illinois had won would help bee keepers of other states to win.

Let me urge, then, that every state do its duty in this regard. If the state of Georgia gains part of the appropriation and uses it successfully in experiments, it will help the bee keeper of Illinois to bring down expenses. Each state will help all the others. Bee keepers, don't be too modest. Ask, and keep asking for your rights.

MABENGO, Ill.,

Nov. 22, 1892.

Honey is Not "Digested Nectar" Even if
Bees Do Change Cane Sugar
Into Honey.

REV. W. F. CLARKE.



PROF. COOK
F is a very gentle, pleasant and mild mannered man in private intercourse and convention discussions, but, in his scientific writings, is prone to be rather dogmatic, and, for that reason, I do

not like to cross lances with him. Nevertheless, I am sometimes obliged to do so, and I feel this necessity laid upon me in regard to his article on the nature of honey, which appears in the October REVIEW. He sets out by objecting, and with good reason, to the definition of honey given by the *Century Dictionary*. He would substitute for it this: "Honey is digested nectar;" adding "Every one understands that honey is the liquid product of bees, which they store in cells of their combs." He says "the merest child and the unlettered rustic, as well as the scholar, agree to this last statement. It is a truism too evident for contradiction, too generally recognized to require any argument." Well, I certainly do not agree to "this last statement" that "honey is the liquid product of bees;" still less do I subscribe to the former one, that "honey is digested nectar." Is not honey the liquid product of flowers? Do we not know to our sorrow and cost that when the flowers do not yield nectar the bees cannot make honey? It seems to me it would be more correct to say that honey is the nectar of flowers which has undergone a process of transmutation by the bees, and so been converted into honey.

The Professor proceeds to say: "The other definition that honey is digested nectar is just as true, though not so evident to the unlearned." It, however, "offends the tastes and sensitive notions of many good people, and especially bee keepers who dread to see any, even an imaginary stigma cast upon their pets, or the product of the apiary. Let me urge that any such statement, if truth, need disgust no one." Then follows

an exhortation on the duty of desiring the truth, also of digging for it, scattering it when found, and defending it at all hazards. I regard this kind of talk as needless. Moreover, it raises my dander, and stirs my bile. I know that truth is what I am after, and I believe that the readers of the REVIEW and the writers for it, including Prof. Cook, are in quest of the same precious commodity. "Such statements, *if truth*, need not disquiet anyone." But I do not believe they embody the truth. It is because I deem them erroneous that I deplore their influence as likely to do harm. I consider them a libel on that marvellous concoction—honey—and likely, if accepted, to injure a highly important industry. Who wants to eat the digested victuals of other creatures however cleanly their habits may be? I don't, and I should not like to be obliged to confess when selling the choicest virgin honey that, pure though it looks, it is the puked-up food of insects. Prof. Cook asserts that "no one need or should object to the statement that honey is digested nectar:—first, because it is truth, and secondly, because this very digestion is in every way wholesome and desirable." Well, I join issue with the Professor on both firstly and secondly.

I think I am fairly challenged by the article in question because at the N. A. B. K. convention held in Detroit four years ago, I opposed the Professor's assertion then and there made that honey is digested nectar. Neither then nor now, were we or are we favored with any proof on the subject. We are expected to bow to the Professor's *ipse dixit*, "No one need or should object to the assertion." Why not? I, for one, object to having things rammed down my throat after this fashion, especially when I am prepared to furnish evidence in rebuttal, and believe that I can refute Professor Cook by quoting from the very article now under notice.

"Digestion is the final and finished result of several processes. Physiologists usually enumerate seven of these processes. It is only claimed that nectar is subjected to one of them, namely, saliva-mixing, and even that is doubtful. Would any sensible man say a coat had been manufactured because the wool had been spun, or a sideboard made because the boards had been planed. I said it was doubtful if even saliva-mixing has taken place. The nectar, as it passes from the bee's mouth to the honey-stomach—a better name would be honey-sac—is mixed

with certain glandular secretions. Who knows positively what they are? About all we know is that they change the cane-sugar of the nectar into grape-sugar. When this is done, it is ready for storage in the cells. It is done quickly,—during the flight from the field to the hive, and never passes into the food-stomach of the bee, except when the little forager is hungry, and needs a portion of it for food. In that case, it passes *down* instead of *up*, through what Burmeister has well called the 'stomach-mouth,' into the chyme stomach, where it becomes digested, and fit to pass into the blood. It is not digested nectar until it passes into the chyme stomach. It is there and not in the honey-sac that it is changed by the digestive ferment and passes readily into the blood."

I have expressed my belief that I can refute the Professor by a quotation from his own article. Here it is: "We all know that honey is carried in the honey-stomach, (honey-sac), and emptied *FROM IT* into the cells of the comb." I have capitalized "from it." Stored honey never gets any farther. Consequently, it is not "digested nectar." If it were, it would, as the Professor says farther on, "pass into the blood and hasten on to nourish the tissues." Digested nectar never gets into the cells of honey-comb. There is a distinct provision of nature to prevent that.

Some will no doubt think me very presumptuous in venturing to dispute an assertion of Prof. Cook's. But I have the best scientific authority behind me. Cheshire, whose competence not even Prof. Cook will question, speaking of the honey-sac, Vol. I., page 60, says, it "corresponds to the crop of most insects. When nectar is gathered by the foraging bees, it is simply held in store in this cavity, the processes of digestion in no true sense beginning until the next chamber, the chyle-stomach is reached." Again, page 65: "Let us now investigate in detail the stomach-mouth and chyle stomach. We have already learned that the first of these enables the bee to store honey, which, although carried within her body, *does not enter her digestive system.*" The italics are mine. Several pages of Cheshire's incomparable work, with copious microscopic illustrations, make all this plain even to "the unlearned," as Prof. Cook politely styles those of us who do not accept his assertion that honey is "digested nectar."

Prof. Cook says: "If we eat cane sugar, we have to digest it. If we eat honey, it has already been digested." Is this so? Does not honey need to be digested by the human consumer of it? Certainly it does. It has been rendered easier of digestion by being transformed from cane sugar to grape sugar. That is all. But it must be digested by the human stomach before it passes into the blood.

It is needless for me to say that I concur with the Professor in what he says about sugar-honey, for the readers of the REVIEW know that I was the first to endorse Mr. Hasty's views on that subject. But that "twenty-three pounds of honey syrup" (?) which he tells us Mr. Larrabee fed the bees in one night, which was extracted next day and sampled by forty persons, who pronounced it excellent honey, was not a finished and perfect article. It needed the capping process during which the formic acid is added. If it were so good next day, what would it have been after capping? By the way, and this is for Dr. Miller, Cheshire says, Vol. II., page 587: "Herr K. Mullenhoff and Rev. W. F. Clarke have pointed out that formic acid is provided by the bees by depositing droplets from their stings, which they touch on the face of the honey." I am therefore in the good company of an eminent German scientist, though I was not aware of it until I read Cheshire's book.

GUELPH, Ont.,

Nov. 15, 1892.



Comments on a Beginners Day Book.

No. 12.

E. E. HASTY.

MY colonies were to be packed two and two for the first winter. The month of December opened with many colonies not yet packed. Some winters this would have been a bad state of things. For an average winter I presume it would be quite a little better to have them all tucked up in November; yet, at the risk of encouraging procrastination, I will say I do not think it makes very much difference. The very mild January and February of this particular winter probably prevented any harm that might otherwise have resulted.

"Dec. 22, 1879. Mild and favorable day, but I only packed four colonies, things were so unhandy."

Unhandy is a superlatively troublesome Andy. If we could only banish him completely it would be equivalent to more than doubling our working force. And the force we gain by a little wise expenditure of fore-thought don't eat any 'taters, nor charge any wages. 'Spects a whole number of the REVIEW might profitably be devoted each year to the topic, "Having things handy." When everything is really handy what a mere trifle it is to pick a swarm from the bush and hive it! And what an awful job when the contrary conditions prevail!—no hive ready, no ladder, no smoker, no basket, no rig; nothing in the right place, and somebody too lazy to bring it back has borrowed the place.

"Dec. 10th. Put in tin condensers in 3-1."

I wanted the frost that forms inside a hive to condense and run down on a tin when melting to some harmless exit. As things usually work it swells and damages the quality of the honey in store, and soaks the inner wood work until a chilly atmosphere inside is assured for a long time to come. Afterward I put in simple tin condensers into many hives—some of my hives have them yet—but such little ones only get a small fraction of the water; while to have them large enough and spread abroad enough to get it nearly all would make them a general nuisance. Guess I shall have to say that the winter condenser is an idea which may have merit, but which has never been properly worked out.

"Dec. 19th. Made in a very few minutes a tack punch from an old file. Proceeded to make a lot of nail boxes—two bits of wide frame and a three inch strip of tin tacked on."

Mechanical handcraft was so completely left out when I was made, that to succeed at blacksmith work, or "anysmith" work, makes me feel like crowing lustily. For a mere trifle one can buy a punch which looks nicely and behaves awkwardly. Or you can have just the opposite state of things, one that will look awkwardly and behave nicely, by breaking a file square across the center and tempering the shank of it. Strange to tell, I value the working of a tool more than the look of it—and the man himself more than his clothes.

"Dec. 19th. Devised a tenement hive for keeping undesirable swarms six in a bed, and using the sealed brood to build up the honey-storing colonies."

This was not to be a winter device, but for summer work. The invention never materialized itself. I have such a strong impres-

sion that in my apiary a colony storing honey would swarm if boosted much with sealed brood that I let the idea drop without spending any effort on it. I am a little fascinated with the idea that, in localities where bees swarm but little, great yields might be secured by giving sealed brood and young bees, in addition to what the mother queen furnishes: but in such a locality there would be no surplus swarms, over and above what the yard has use for. So this particular invention would be a ship launched in Dry Creek.

"Dec. 20th. Packed four colonies of bees while the thermometer stood at about 30°. Bees that flew around mostly fell on the snow and perished, but very few did so except from the last colony."

I was surprised and pleased to see how nicely I could get along under the circumstances. Have often done the like since. Yet we have respectable testimony that very slight disturbance of a quiet colony in winter, if repeated often results in serious damage to the colony, and sometimes in the ruin of it. If repeated disturbance rins, will not one disturbance injure? Perhaps it does; but I take the chances. Moreover I have a way of figuring clear of the injury in this style: Disturb a colony just enough that part of the bees crawl out of the cluster, while the most of them remain, and those that crawl out may scatter around on the cold combs, become chilled there, and there remain until they are dead. This evidently injures the colony just to the amount of the number of bees needlessly killed. But give the colony a little *more* disturbance and the bees will all stir around, warm up the premises, and eventually form the cluster again without chilling any. I do not think that one stirring up of this kind in a winter is a material injury. Perhaps I'm wrong—but so long as we wish to skin eels we like to presume that it don't hurt 'em very much.

"Dec. 22nd. Made the first Gallup chaff division-board—one side of $\frac{1}{8}$ inch wood, two strips of the same for tops and bottoms, and the rest muslin."

These division-boards, or dummies, I have yet. They neither break, rot, wear out, run away nor get stolen. Every time I use one of them I feel a sort of twinge of indescribable feeling—of "rheumatism of mind," to the effect that they are a nuisance. Serve their purpose tolerably well, to be sure, but a trifle more trouble and expense would have supplied the apiary with thoroughly satisfactory ones, not to be repented of. Things

which we are to use but once, or which we use but seldom may well be extemporized in an off-hand way; but as to articles of continual use, let us have the best—that is, the best that reasonable pains and expense will procure. The reporter that buys cheap pencils, and the bee-keeper that buys a cheap uncapping-knife, are not admirable but reprehensible persons. Here is a point in which all men, bee-keepers as well as others, are interested. It will not do to go always by the motto, "The best is the cheapest." It would take a fortune to settle the bills. There must be *some* willingness to take a cheaper article, else the askers of extortionate prices would have everything in their own way. On the other hand the universal habit of always taking the cheapest thing that looks as though it might answer would destroy quality, prevent progress, and starve out good work and good workers. The best we can do is to strike a golden mean—insist on the very best in a few things that are most vital to us, and insist on a reasonable cheapness in a lot of other things which are important but not superlatively so. And as to articles which we make for ourselves very nearly the same principle applies.

"Dec. 24th. Tried putting two stands, 4-1 and 4-7 on dry sawdust for winter without any bottom board."

Here I was after two important things, drainage of internal sops (which will not run out in winter by reason of snow and ice around the edges) and the moderate but valuable warmth of mother earth, upon whose bosom we rest. The experiment succeeded very well; but as moles and burrowing mice are very liable to root into any snug retreat left open to them, either on or under the earth, the success had to be credited to a lucky accident. How to secure these advantages safely is a problem which I have not yet worked out satisfactorily. When we make a bank of sawdust and settle the bottom board of the hive into it firmly it seems as though winter's cold would not come in from that direction much, but it will. Mice and shrinkage and wind will speedily open much of the territory under your board, and earth warmth is too feeble to avail much across an open space through which the winter air is circulating. A well bedded piece of sawed stone, and the hive set directly on it without any other bottom, would communicate what heat the earth had to give; but sops would not soak down and

disappear. Whether it or a board would communicate more dampness to the inside air I am not sure. In summer and early autumn, when dampness would signify little or nothing, the stone would yield the most. By using coarse wire netting, and sinking it in the ground a few inches, the original scheme could probably be worked; but I imagine the device would be too perishable and too much fuss. At present I feel as though my "Finality Hive," toward which I am studying and working, would most likely not try to utilize any earth warmth. A double bottom with two inches of sawdust inclosed, and the upper surface so thin and porous as to drink up water, looks most feasible.

How very much land there still remains to be possessed in our honey Canaan. We want a better wintering hive for cold latitudes, a non-swarming hive for places where swarm fever rages, a get-up-and-travel hive, that will manipulate with perfect ease for migratory apiculture, and less of the "burglar-proof" features everywhere—else a hive into which we shall have no need or occasion to burgle.

RICHARDS, Lucas Co., O., Nov. 30, 1892.



**A Bee Cellar Above Ground Made a Success
by Means of Artificial Heat—Ventilating Tubes Not Needed.**

H. R. BOARDMAN.



THE SUBJECT OF Bee Cellars has been pretty well talked up, as you say, but not entirely exhausted I conclude from the diversity of views entertained in regard to it. I am free to admit that I have learned some things about wintering bees that I did

not suspect a few years ago.

It is not safe to jump to the conclusion that bees will winter more successfully in any kind and in all winter repositories than on the summer stands. I have used four different repositories—two bee houses and two cellars under dwelling houses—all being in use at the same time for several years.

So far as I could judge one was as good and safe as the others, but the test of experience proved that the conditions, for some unseen reason, were not equally favorable for wintering the bees well. But my experience on this point does not support your opinion that above ground cellars have not been a success.

My bee house at my home apairy is arranged convenient for using artificial heat and it has been used every winter more or less. The others are not arranged for heating artificially and no artificial heat has been used in them. My home apiary has wintered with uniform success for many years and much more perfectly than the others.

This house I have described several times but it may not be out of place to speak of it briefly here.

It is 50 x 12, by 8 feet to the eaves, double walled and filled with sawdust all around and overhead, and a cement floor.

It is divided into three rooms. The middle room, which contains a stove, is divided from the other two by a loose double wall with a four inch space (not filled.) This room is my bee kitchen in which all of the house work pertaining to the apiary is done. The other two rooms are for the bees. Some other besides apiary house work is also done in the bee house kitchen. During the last two winters the room has been used for a family laundry and the washings have been done here and the water heated upon the stove for that purpose every week. Of course this is a regular application of artificial heat without consulting the temperature and is open to criticism, but the bees wintered in the very best condition notwithstanding my apprehension.

A cistern of soft water is one of the conveniences of this cellar and by no means the least.

Since I built my first bee cellar I have modified my views somewhat upon the subject of ventilation in bee cellars. I viewed it then as a very important feature. It looks all well enough in theory, but experience does not support the theory. I put ventilating tubes in my bee rooms and had the satisfaction of discovering that those colonies nearest these tubes (those that were the best ventilated) were the first to show signs of uneasiness. I took out the ventilators after the first winter and have never had any use for them since.

Until brood rearing begins towards spring very little change of air is needed; after this, more is necessary. The sub-earth ventilating fad has probably about had its run.

I have often thought that a side hill would be my choice for a location for a bee house if I could have such choice. But I am one among very many who must of necessity do without the hill. After using it for many years I should have but few changes to suggest in my home bee house.

I would not even dispense with the cement floor and the kitchen with its facilities for warming the bees in winter.

EAST TOWNSEND, Ohio. Oct. 4, 1892.



No More Revolutionizing Inventions Expected. — Bee-Keepers Must Practice Economy and Common Sense.

R. L. TAYLOR.



ACH writer is asked for the best article he ever wrote! Whew! Milton composed his magnificent "Paradise Lost," and having gained experience, sat down to write a masterpiece, and produced the tame "Paradise Regained." Horace in

describing such a crisis, says (pardon my allusion to the Latin) *Parturiunt montes nascetur ridiculus mus*, which I freely translate: The Rocky mountains are in travail and will give birth to a funny little mouse. Writing under the burden of such a request one can only invoke the muses to sustain him as he attempts to direct his tottering steps.

Until a time that is within the memory of many still living the hive was a sealed book, but thanks to the love of investigation and to the ingenuity of Langstroth, the seals were broken and its pages opened with a touch of the fingers of every reader. Against the barriers of fixed natural combs the waves of progress had broken for ages, but at length they were overthrown and movable combs came in. This was a revolution in itself, but it was more, it was the parent of revolutions. It created a neces-

sity for the honey extractor and comb foundation and showed the way to the present shape of section comb honey. With the necessity there was possibility, and these twain harnessed together are all prevailing. The needed discoveries were made and bee keeping took a respectable position among other rural pursuits. A want of some means of controlling queens and drones was felt and perforated zinc was found in its various applications to satisfy it. A multitude of other wants have been supplied by appropriate devices so that it would seem that the outfit of the business is now well rounded up.

What is there still to come? What lack is there? What want is felt?

Some want non-swarming bees, some a non-swarming hive, and some a self-hiver. We would all no doubt like an arrangement by which all the bees of an apiary could be induced to store all their surplus honey in one common pile of section cases.

Necessity is the mother of invention, but possibility is the father. There may be a want of non-swarming bees or a non-swarming hive, but so long as birds build nests so long will bees swarm. Many appear to think they need a self-hiver, but one cannot well afford to buy and place in position 200 self-hivers to catch 60 or 70 prime swarms. That would be too costly and too laborious. Besides, for other reasons than swarming, it is profitable to give personal attention to an apiary during the swarming season as often as once every two or three days. Good queen traps would do the rest and in any case I suspect they would be preferable to any self-hiver.

There will no doubt be many devices discovered from time to time that will relieve the bee keeper in a small way, but search as I will I can discover no great need that can by any possibility be met by any wonderful invention. He who, peering into the mists of the future, proclaims that he discovers an invention approaching that is to create a revolution in apiculture may be set down as a visionary or else he has made some miscalculation.

If my conclusions are correct it follows that the chances of success in apiculture will turn upon the man rather than upon any sleight of hand in management or magic of invention, so the editor has done the right thing in calling for the best advice that can be given to bee keepers.

What a wonderful thing is advice, I have found myself exclaiming as I have been

meditating on this subject. I could give advice that would revolutionize the world in an hour. How honest and industrious and temperate and peaceful and Christian and blessed this world would be! No wonder there are always so many who are ready to give advice. But there is a difficulty about it. To be effectual it must be taken. Nevertheless, with the hope that those interested in bees are more attentive to their interests than are other classes I will close with

THE BEST ADVICE I CAN GIVE BEE-KEEPERS.

Prevent waste. There is no occasion for a well person in this country to be poor. Waste in some form makes the difference between poverty and comfort. Are any of your hive covers or bottom boards or feeders or other implements of the apiary unnecessarily exposed to the weather? What becomes of your broken comb and pieces of wax? Do you allow the moths to destroy your empty combs? If so, get your hand on the stop that controls waste and bear on. Get on it with both feet if necessary. It will improve your circumstances.

Don't chase rainbows. You think you are an inventor, but you are not. That new hive or frame or other contrivance you have been planning so long—drop it. And be a little wary of other people's inventions. Your indorsement is not necessary to save a good thing from oblivion, and your money can't save a bad one. Don't waste time waiting for some promised invention that is to work wonders. The chances are a thousand to one that it won't come, and like odds that if it comes it will prove worthless.

Don't get discouraged. Be neither elated nor depressed. Don't give away your bees nor don't destroy them. Crowd them for all they are worth, but go slow on increase. Add as few to the number of your colonies as possible. Feel your way till you know your ground and stick close to your business. The horse with the best staying qualities is the one to bet on.

Strike while the iron is hot. In bee keeping work *must* be done at the right time. To do otherwise is to give success away. If you will do everything at the right time your work will not crowd you at any period. Get everything ready this winter for the honey season and swarming and then keep up with your work.

Finally, don't get excited about new things or new ways. Follow present plans until in your coolest moments you decide a change

to be the best. Let others try novelties first. Exercise your intelligence and keep your head level. Sleep well at night and keep wide awake in the day time.

LAPEER, Mich.,

Dec. 3, 1892.



House-Apiaries Properly Constructed and
Managed Would Greatly Advance Bee-
Keeping.—The Reasons Why.

B. TAYLOR.



IN YEARS PAST I have had as many as 400 colonies of bees, and raised as many as 26,000 pounds of comb honey in one season. I always got satisfactory pay for my time until I began to regard a honey crop as about as certain as the sea-

sons themselves. But the last three years have not turned out the old time crops, and bee keepers are beginning to ask "What shall we do to be saved?" You, Mr. Editor, say in your leader:

"Bee keepers have had winter losses, foul brood, low prices for honey and poor seasons to contend with. Sometimes one of these burdens bears quite heavily, then it becomes less weighty and another takes its place. A few years ago the trouble seemed to be to find a market for our product. Several poor seasons in succession have removed that trouble effectually, but the remedy is worse than the disease.

Taking bee keeping as it is, what does it most need? Does it need better appliances? Shall we keep more bees and establish out-apiaries, or shall we keep less bees and do something else?

If a man is to stay in it, what shall he do different than what he is now doing?

What is needed is to be able to place an apiary out here a few miles, another out in this direction, another in that, etc., and then have matters so arranged that one man can care for all of them. Or these same methods must allow a man to have an apiary at home and be able to manage it by the use of a small part of his time. I believe that it is in this direction that bee keeping talent should turn its energies."

This language of yours, Mr. Editor, is a confession that bee keeping is having serious difficulties to contend with. Yes, sir, long before your leader was thought of, I fully understood these troubles, and had arranged

my plans for meeting them. For the last three seasons my honey crop hardly paid expenses, and having no proof that we might not have more singular seasons, I fully realized that there was need of changing old time methods, if we were to make bee keeping pay in these changed conditions. You may remember that in my article on "Feeding and Feeders" in the September REVIEW I said, "big swarms, so heavy with natural stores that they would need no tinkering in the spring other than to cover them warmly on top and then leave them severely alone, was the gospel that would control the Forestville apiary in the future." I had a few such swarms this last season, and if all my colonies had been like those I would have made a handsome profit with my apiary, even this poorest of years. One of the poorest paying practices I can remember in the past was that of fooling away time trying to doctor up weak swarms. If we must have big swarms at the time of the main honey flow, how can we best get them? I say by having them strong *at all times*. And I am fully convinced that the house-apairy is just the place to accomplish this end with certainty, and with less cost than in any way. I firmly believe that the house-apairy is to be the "Mecca" in the new dispensation in bee keeping. And you, Mr. Editor, if you live so as to keep a firm hold upon life, will live to see most of the bees kept in that way. If I had in my pocket the \$300 that I have invested in my wintering cellar, the cellar would never be made; but, instead, I would invest the money in a house apairy in which the bees would be kept the year through.

I have been in the past, and am still, a firm believer in cellar-wintering as compared with old ways of out-door wintering, but I am now convinced that bees wintered in a proper way in a house-apairy will come out healthier and breed up better than where cellar wintered. Dr. Miller, in an article in the *A. B. J.* of Nov. 24th, on cellar wintering, says :

"I feel a good deal like saying I'll not fuss any again with out-door wintering; and still I can't get rid of the feeling that I'd like to succeed in it. I have done so, to a degree, by using proper protection, but on the whole I have done best by wintering bees in the cellar. The reason that I'd like to winter bees out-doors is, that I have just a little notion that when bees winter out in the pure air they are in a little better condition to commence work in the spring. Still, if they have good air in the cellar, I don't see why they ought not to do just as well there. But

just there is the rub. Have they as good air in the cellar?"

Two extensive bee keepers in Minnesota, Mr. Aldrich and Mr. Thielman, told me that a lamp would immediately go out if carried into their wintering cellars last winter. In my own cellar a lamp will burn as brightly as in a well ventilated sitting room, and yet I do not believe that the bees are as healthy wintered in it as those in the house-apairy, where they are surrounded with thick walls of sawdust, and will not be aroused unless there is a real warm, nice day. But when such a day comes they take a good, joyful play. There has been one such day here already this winter, Nov. 20, and they swarmed out of the house in the most joyful mood. There will be several such days before next April. Where is the intelligent bee keeper who will attempt to prove that such occasional flights are not more likely to be favorable to health than to be confined four or five months without exercise? So well am I convinced of the value of house-aparies that I am building a new one, and about the first of March I shall move the required number of good colonies from the cellar into it, pack them warmly with dry sawdust, and with a new feeder which I have made from empty oyster cans packed in the sawdust on top of each hive, in which the bees can get the syrup without leaving the cluster, and with which I can feed the whole sixteen colonies in five minutes if feeding is necessary in the spring and keep the bees booming even if the spring proves as bad as the last one.

And let me say here that the house-apairy is the safest, handiest, and most profitable place in which to feed that I ever tried. My new house is sixteen feet long and eight feet wide and seven and one-half feet high, and when filled will hold thirty-two swarms, sixteen on the south-west side and the same on the north-east side—(the building will stand south-east by north-west)—the lower tier of hives will be six inches from the floor and the upper tier midway between that and the roof. The entrances will be just like those in my other twelve-colony house that has been described in the REVIEW. The roof will project over the sides two and one-half feet, like a railroad depot roof, so that the entrances will be protected from rain and snow. The door is in the west end and there is a large sliding window in the center of the east end with revolving wire screen on the outside and a shutter hung from above

on the inside to make all dark if needed. A galvanized iron chimney is in the center of the roof for ventilation, and to set a stove up if one should be needed. The walls are of one thickness of good 7s pine boards, twelve inches wide, placed up and down, and the cracks nicely battened. The joist overhead is 2x6 laid flatwise. There is a floor laid on all this space overhead, except two of the spaces between the joists, which are left open to get things into the loft.

When I unpack the bees the sawdust will be put into gunny sacks and kept in this dry overhead place until wanted again, when the sacks can be easily taken down and the contents poured over the hives. A movable table $2\frac{1}{2} \times 5$ feet will occupy the space between the hive stands to work on when handling the bees. The space under the lower hive stands is packed with ten inches of pine leaves. On the upper shelf the hives have a shallow box four inches deep and one inch less than the bottom board under each hive, and in packing this will be filled with sawdust to protect the bottoms of the hives from cold. The building will be nicely painted and cost \$50.

I shall manage this house about as follows: Twenty-four swarms will be packed in the spring, the two south stands and lower north one being occupied. The north upper stand will be left vacant. If the bees swarm from any of the hives the swarm will be hived in an empty hive, the parent hive moved to one of the vacant stands and the new one set in its place; the next one that swarms will be treated in the same way except that the parent hive will be set on top of parent hive No. 1, a queen excluding honey board being placed on top of it, hive No. 1 being first given a laying queen. These two hives will soon make a strong colony. All queen cells will be destroyed in the upper hive and as the young bees hatch out the top set of combs will be left to be filled with honey to give to light colonies in the fall, or for extracting, if not required. Others, as they swarm, will be treated in the same way. I will run a few of the swarms for extracting, probably all of the eight colonies on the north side. I will give them all the empty combs they can fill, and prevent swarming if possible.

Part of the colonies that swarm will have the bees returned and the profits of the different methods tested; in fact, this house will be run for experimental purposes, to

find the best method of management; for, mind you, in house apiaries all the work of caring for these bees will be done inside the walls. No lugging heavy hives, no hot sun or wet grass, no carrying into cellar in the fall and out in the spring and what a splendid thing for out-aparies; just think of from six to thirty-two-colony houses or larger ones in as many good locations, all safely packed against intruders, the hives always on their summer stands, always in their winter quarters, where you can feed at any time of the year without opening a hive or disturbing a bee, or the least danger of robbing, and where the most vicious hybrids will make no attempt to sting. No shade boards needed, no caps or covers to lift, no leaky hive covers, and all at less cost than the same number of colonies can be started in open yards when everything is counted.

Again you say in your leader "it is mostly in the devising of plans, methods, hives, appliances, etc., whereby the labor of raising honey may be lessened that bee-keepers must look at present for their success.

I am confident that I can equip a house apiary of one hundred colonies in first class fashion, for \$200, this sum to include house, hives, supers, honey boards, bee escapes, swarm catchers; in fact everything except the bees. This is cheaper than you can equip an out door yard for wintering, cellar and all other necessary expenses counted. All the hives, supers, and, in fact, everything in the line of supplies for the house, may be made nearly one-half cheaper than for outside yards. I want to mention right here one of the splendid things connected with the house. You can just open your hives at all times of the day in any part of the honey season, and not a single robber there to bother you. So gratifying is this fact that I would adopt the house apiary for the pleasure and profit of this one point alone.

Again you say in your leader "let each in his mind go over the bee-keeping of the past, see how it has progressed first in this direction then in that, met this obstacle then that, then consider the bee-keeping of the present, its needs and necessities, then try and give the best advice possible to give in a single article as to the course that bee-keepers ought to pursue in the future to make their pursuit more pleasant and profitable."

Well, Mr. Editor, the ideas embodied in the above quotation from your leader are the very ones that I am expecting to materialize

in building my house apiaries. I am not expecting to take my pay for this work in the pleasure of testing new things, I am doing it in the true bread and butter sense, just because I believe I can get more, of both profit and pleasure by it. Again you say "my friend, from your experience and observation, please write the best article that you can that might be appropriately headed, 'The Best Advice That I can Give Bee-Keepers."

Well, the best advice that I can give to bee-keepers is embodied in what I am trying to do for myself. I have no interest in my course except that I believe I can better my condition as a honey producer. Go then and do likewise.

I see that you say in the last REVIEW that I am going to build a new house apiary in the spring. If no bad luck happens I expect to have it completed before the next REVIEW is in the hands of its readers, as it is well under way now. When it is all completed I will give a minute description of it.

FORESTVILLE, Minn., Nov. 29, 1892.

Bee-Keepers' Review.

PUBLISHED MONTHLY.

W. Z. HUTCHINSON, Ed. & Prop.

TERMS:—\$1.00 a year in advance. Two copies, \$1.90; three for \$2.70; five for \$4.00; ten, or more, 70 cents each. If it is desire I to have the REVIEW stopped at the expiration of the time paid for, please say so when subscribing, otherwise it will be continued.

FLINT, MICHIGAN, DEC. 10, 1892.

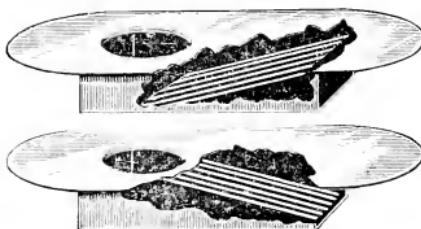
EIGHT extra pages this month.

BUCKWHEAT (four acres) gave 10 colonies nearly 200 pounds of surplus and about 30 pounds each in the brood nest. So writes Arthur C. Miller. Only one other colony in reach of the field and no other buckwheat in the county so far as he knew.

THE CANADIAN BEE JOURNAL has reduced its measure (the length of its lines) to thirteen "ems," the same as those of the REVIEW. This gives more margin which, together with the dropping of the column rules, gives to the pages a much neater, cleaner appearance.

NEW FORMS OF THE PORTER BEE ESCAPE.

I HAVE recently received from Messrs. R. & E. C. Porter several modified forms of the Porter Bee Escape, engravings of two of which appear below. These forms, however, are not preferred to the one that has been so extensively sold by them during the past two seasons, but are shown merely to give an idea of some of the many forms in which the Porter Escape has been tested.



The engravings make all so plain that a description is unnecessary. As will be seen, the bees pass out over the springs in one style: in the other form they pass under the springs.

CHAFF HIVES with sawdust cushions overhead are the kind of hives for wintering bees that please Mr. Doolittle better than any others. He has arrived at this conclusion after years of experience.

HONEY VINEGAR, to the extent of 100 barrels, was one year made and sold by W. K. Marshall, in Texas, as I see by reading the report of the Texas convention given in the A. B. J. The vinegar was made from dark honey that would have otherwise been almost unsalable. When we again have such crops of honey that it is almost a drug in the market it will be well to remember that the making of vinegar may prove a profitable outlet for some of the honey.

THE REVIEW FOR 1893.

What the REVIEW has been in the past it will be in the future. There may occasionally be slight changes. For instance, more attention will in the future be given to the "Extracted Department." The market reports will also be added with the beginning of the year. When sending out circulars, as mentioned in another column, to learn why some had not renewed their subscriptions, I learned that many bee-keepers can afford to take only one journal. I am going

to work harder than ever to have the REVIEW of such a character that if a man can take only one journal the REVIEW will most fully answer his needs. I shall strive harder than ever to gather all of importance that appears in the other journals, shall discuss special topics whenever the occasion demands, and ever aim to give the brightest, freshest ideas in apiculture.

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A HONEY EXTRACTOR with a reel more than seven feet in diameter is illustrated and described in a late number of *Gleanings*. It is to be used in Cuba and run by steam power. W. A. Osborn of Cuba has a similar one and tells in *Gleanings* of its advantages in that land of big apiaries and enormous yields. Such an extractor will throw out 10,000 pounds of honey by working from seven in the morning to four in the afternoon. Such an extractor may be all right in its place, but it has no use in an ordinarily large apiary.

THE NORTH AMERICAN BEE-KEEPERS'
CONVENTION.

The North American Bee-Keepers' Society will hold its 23d annual convention Dec. 27, 28 and 29, at the Randall House, corner Penna. Ave. and 15th Sts., Washington, D. C.

This hotel is new, handsomely furnished, and first class in all its appointments, and is the most centrally and beautifully located of any hotel in Washington. The regular rates are \$3.00 a day, but to those attending the convention they will be only \$2.50. Besides this, if only fifteen members stop at the house, a hall in the hotel will be furnished *free*. Otherwise, the charge for the hall will be \$5.00 per day. Of course there are other cheaper hotels to which those who choose can go. Rates as low as \$1.75 can be secured. Or a room at \$1.00 a day can be obtained and meals taken upon the European plan.

The convention will be held when all railroads will give a round trip for the price of one and one-third fare. It may be well to explain, however, that these rates are given only for *local* traffic. In other words, a person who has to pass over more than one road cannot buy a *through* ticket and take advantage of the reduced rates. In order to take advantage of the reduced rates he will be obliged to first buy a round trip ticket over his own road; then upon reaching the

next road, buy one over that, and so on. It may be possible that a limited return ticket could be bought nearly as cheaply as to pay these locally reduced holiday rates. Let all consult their ticket agents in regard to this before buying their tickets. The trunk lines would have granted reduced rates (one and one-third fare) but there must be 100 persons present. Should there be less than 100 present holding railroad certificates, the reduced rate would be withheld. Should we adopt the certificate plan and then the attendance be less than 100, there would be better disappointment and loss, as, had the members not *expected* to return at one-third fare upon presentation of their certificates, they would have taken advantage of other reductions. As it now is, those living on roads leading into Washington *direct* will be all right, while those coming over more than one road can manage as suggested.

PROGRAMME.

FIRST DAY—TUESDAY, DEC. 27.

AFTERNOON SESSION—2:00 P. M.—Payment of annual dues; reception of new member and distribution of badges. "President's Address," Eugene Secor, Forest City, Iowa. Discussion. "Grading Honey," Dr. C. C. Miller, Marengo, Ill. Discussion. Question Box.

EVENING SESSION—7:30 P. M.—"Self-Hivers," E. R. Root, Medina, Ohio. Discussion. Question Box.

SECOND DAY—WEDNESDAY, DEC. 28.

MORNING SESSION—9:30 A. M.—"Detecting the Adulteration of Honey," Prof. A. J. Cook, Agricultural College, Mich. Discussion. (Prof. H. W. Wiley, U. S. Chemist, is expected to be present and join in the discussion.) "Varieties of Bees and Their Characteristics," Frank Benton, Washington, D. C. Discussion. Question Box.

AFTERNOON SESSION—2:00 P. M.—"What the Department of Agriculture Ought to Do for Apiculture," P. H. Elwood, Starkville, N. Y. "What the Department of Agriculture Has Done and Can Do for Apiculture," C. V. Riley, Government Entomologist, Washington, D. C. Discussion. Question Box.

EVENING SESSION—7:30 P. M.—"Shall the Scope of the Bee-Keepers' Union be Broadened?" T. G. Newman, Chicago, Ill. Discussion. Question Box.

THIRD DAY, THURSDAY, DEC. 29.

MORNING SESSION.—Selection of place for holding next meeting. Election of officers. Report of Committees. Completion of Unfinished Business. Question Box. Adjournment.

Just a word in regard to the fewness of the topics. Some of the topics are of unusual importance and deserve most thor-

ough discussion. It is very unsatisfactory to have an important discussion in full blast cut off short and perhaps referred to a committee in order to give room to the next topic. A full convention can bring out all the points much more fully than a few men in a committee room. One suggestion leads to another and "in the multitude of counselors there is wisdom." The questions in the question box (often of importance) are frequently referred to a committee to be answered. A discussion in full convention is more likely to bring out the truth. If any one has any topic or question that he would like discussed and will not be present to ask for its discussion, let him write to me at once and I will see that the matter is brought to the notice of the convention. The discussion of a topic often leads to another which it would be very desirable to discuss, but lack of time prevents. It is believed that the above programme will allow a reasonable time for the discussion of these interesting side-questions that are continually springing up.

W. Z. HUTCHINSON, Sec.

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IN THE FUTURE THE REVIEW WILL NOT BE CUT
OFF SHORT WHEN SUBSCRIPTIONS EXPIRE.

Most of the older readers of the REVIEW will remember how I have opposed the practice of continuing to send papers after the subscription had expired. I took this ground because I supposed that everybody looked upon this continuance as a sort of attempt to force the paper upon them whether they wanted it or not. I have learned, to my surprise, that the majority of people do *not* view the matter in this light. Let me tell how I learned this fact.

One year ago, as I sat looking over the subscription book, I fell to wondering *why* those who did not renew had failed to do so. I thought what an immense advantage it would be if a publisher could always know why a subscriber did not renew. As I thought the matter over, I decided to *ask* each subscriber who had not renewed *why*, having once been a subscriber, he was not one now. I at once prepared a circular letter and sent a copy to each old subscriber who had not renewed. It was not written in a fault-finding spirit, but the recipient was told that no person failed to renew unless there was some *reason*, and that if the publisher could always know what that reason

was it would be an *immense* advantage. If there were faults in the REVIEW, he was asked to point them out, not sparing the "feelings" of its editor, otherwise the reply would be of no value. The idea was that from a knowledge of where I had failed in the past I might gain wisdom, and so conduct the REVIEW in the future that the number who failed to renew would be lessened as the years went by.

With the circular was enclosed an addressed and stamped envelope and a sheet of paper with which to make a reply. One or two late issues of the REVIEW were sent each person receiving the circular, and to those who liked the REVIEW but had allowed their subscriptions to expire simply from neglect, the back numbers were offered at half price if they renewed their subscription to the end of the next year.

About one in four renewed his subscription and most of them in renewing took advantage of the offer of back numbers at half price. Perhaps one-third, who did not renew, wrote and told *why* they did not. The others paid no attention to the matter.

I don't know whether any other publisher ever adopted such a plan. It certainly was original with me and seemed like quite a novel scheme to get a peep behind the scenes.

And it *was* a peep behind the scenes. I tell you those letters were rich, racy and overflowing with advice—*some* of them. I think most of the writers were perfectly frank. As I had expected, quite a number had dropped the REVIEW because the price was raised to \$1.00. Other journals that cost no more came oftener or contained more reading matter. Of course, when a man thinks the REVIEW isn't worth \$1.00 a year, I can't have any argument with him. I will say this, however, many who wrote thus have since sent in their subscriptions.

Quite a good many had died, and the pathetic letters written by wives, daughters or sons caused my heart to go out in sympathy to the sorrowing writers.

As the letters were received, I wrote in red ink just over each name in the subscription book, the reason why that subscriber did not renew. As I glance along over the pages, it is surprising to see how often occurs the following entry: "Out of the biz." I tell you the last few years have been trying ones to bee-keeping. Those who are now in the ranks may be considered the cream.

At last, I have come to the point that I started out to make. A large share of those who stopped taking the REVIEW did so simply because *I stopped sending it when their time was out*. It was a revelation to me. The time for renewing came at "tax time," and at a time when little or no money was coming in for honey. *Gleanings* and A. B. J., so they said, "kept coming" and were paid for when convenient during the year. In other words, the REVIEW stopped at a time when money was scarce, and by the time that there was money with which to renew, many of its readers had become "weaned from it" so to speak, "out of sight out of mind."

To me there is no sweeter pleasure than "owning up" when I see that I am in the wrong. It is very evident that the majority preferred to have the REVIEW "keep on coming," paying when convenient, while I had supposed the reverse to be true. At the same time I could not forget that there is a class that prefers to have papers stopped at the expiration of the time paid for. How to please all classes was a puzzle.

During the last few months I have given this matter considerable thought, and, after thoroughly examining the plan now followed by *Gleanings*, I have decided to adopt it. In substance it is as follows:—

When sending in your subscription, if you wish your paper stopped at the expiration of the time paid for, say so, and your name will be marked with a big D on the subscription book, and when your time is out the paper will be discontinued as indicated by the "D." In each expired journal not marked with a "D," will be placed a circular letter together with an order blank and an envelope addressed to the REVIEW. The circular letter will give notice of expiration of subscription, and say if you want the REVIEW continued, fill out the blank and enclose it with \$1.00 in the addressed envelope. If you desire to have the REVIEW stopped, write on the blank "Please discontinue." If no notice is received, the REVIEW will be continued, and in three months another notice will be sent. If this is disregarded, the REVIEW will be sent three more months, and then another notice sent. If no response comes, the REVIEW will then be stopped and a notice sent to that effect, together with a request to remit for the time not paid for. If the dropped subscriber still pays no attention, he is troubled no further. I certainly shall never send the REVIEW month after

month and year after year, without receiving pay or some kind of an order or understanding from subscribers. When six month's "grace," instead of only three days as on a bank note, are given a subscriber, he can certainly either send in his subscription or else write and say when he *will* send it.

I expect that this plan will entail considerable more work upon somebody in the REVIEW office, but the number of subscribers thereby retained that would otherwise be lost will probably repay for the trouble, and I shall feel that *all classes* are suited. To recapitulate: if you want the REVIEW stopped at the expiration of the time paid for, say so when sending in your subscription. If you did not say so when subscribing, yet that is your wish, please write and say so upon receiving notice of the expiration of your subscription. If you wish the REVIEW to keep on coming, you will of course send in your subscription. If you don't happen to have the \$1.00 to spare, I am willing to wait a reasonable length of time, but you must write and say that you would like this extension of time, else how am I to know anything about it?

RECOLLECTIONS OF THE EDITOR OF THE REVIEW.



"w. z." AT 18.

FOR the editor of a journal to give a picture of himself, or say very much about himself, in his own journal, has been regarded as the result of egotism. Perhaps it is in some cases, but when an editor knows that his readers are interested in him,

and would like to know how he looks and what kind of a man he has been, and is, I believe it wisdom on his part to gratify this natural curiosity, hence I shall add extra pages that I may not encroach on the regular bee matter, and tell you something of my early life.

I, William Zenas Hutchinson, was born Feb. 17, 1851, in Orleans county, N. Y. My first recollection dates from when at the age

of 'three years I used to run away from home to play with a little girl living near by. A high board fence surrounded the house and garden, but by climbing upon a grindstone standing near the fence I managed to reach the top of the fence and then drop down "over the garden wall." When this feat of mine was accidentally witnessed, the grindstone was moved away. By persistent search, I at last found a hole under the fence at the further corner of the garden. It was nipp and tuck but I squeezed through. Great was the wonder for several days how I escaped from the yard. I can remember keeping my own counsel when I heard "grandpa" say at the dinner table, "I don't see, after I have move that grindstone away, where under the sun that child gets out."

I was the eldest child, and when four years old, father and mother and I went west to Michigan. It seems strange, but almost the only thing I can remember of the journey is standing and looking through some glass doors at the great engine that pushed the steamboat through the waters of lake Erie.

In Genesee county, on the very farm from which I moved when I came to Flint, is where my father located. It was literally in the wilderness, my first recollection being that of standing at the windows of the log house and seeing father cut down trees that they might not be blown upon the house. Deer often browsed upon the twigs of the fallen trees. Father made shingles right in the house, and when a load was completed there was the great event of a three-days trip with them to Saginaw. How I did try to stay awake (but always failed) the night that he was expected home.

As I older grew and began to "roam the wild wood over," how many times have I fairly jumped as the partridge sprang up with a loud *w-h-i-r-r* from almost under my feet. How many times have I seen the ground in the woods covered as with a purple mantle by the flocks of wild pigeons that settled down upon it in the spring to pick up beech nuts. I have seen times when it seemed as

though the sky was actually darkened by the flight of these birds.

Within forty rods of our house flowed a stream perhaps a rod in width. There were wide "flats" on either side, then high banks. In the spring freshets these flats were covered with a rushing flood that made the small stream into a respectable river. I can remember standing on the high banks and thinking how grand looked the broad expanse of rushing waters with the trees standing so sturdily in their pathway. Dear old Butternut Creek, how many, many miles have I tramped up and down your banks! I believe that even at this late day I could make a map of several miles of that stream, putting in every little crook and turn.

When mother came West she did not forget to bring the flower seeds, roots and cuttings, and how many times, when the June roses come, do I think of the times when myself and brother used to walk along a woodsy path on our way to school, each with his straw hat (made by mother) encircled with a wreath of June roses. One of the clearest recollections of my earlier school days is that of the persistent swallowing that it required to keep down the lump that would rise in my throat when I missed a word in the spelling class and some one spelled it correctly and went above me.

When I was about eight or nine years old father bought a pair of white steers six months old. Wasn't that an event? Didn't they have a good bed to sleep on and lots of brushing down and plenty to eat? How they were petted and led about and a little yoke made and the work of "breaking" begun in real earnest. They were all the team we had for several years, and I can truthfully say that I was proud of them.

I expect that my natural bent is for machinery. This trait early showed itself. I early began the manufacture of windmills, water wheels, sawing machines, etc. I well remember working all of one entire summer in the construction of a sawing machine. It was all made of wood, but it had a regular horse power with sweeps, a tumbling rod, gearing, etc., and a bucksaw for a saw. I visited every saw mill within ten miles and knew exactly how all of the machinery was arranged in each. I can remember feeling bad to think that improvements would be made in machinery after I was dead and gone and I would not be here to see them.

Oh, but the struggle for nails in those days! Every nail that could be pulled out



"W. Z." AT 36.

was pulled out. Father scolded and said the buildings would be tumbling down if I did not stop it. By the way, the cow stable was put together with wooden pins, because of the difficulty in getting nails. One day when sent to a neighboring town with some eggs to buy some groceries, I remember buying two pounds of nails and secreting them in a log heap near home. But when I went to using them my conscience smote me so that I had to go to mother and confess. After that she often said: "You may get a few nails if you need them."

Speaking of the market-trip to a neighboring town reminds me how I enjoyed those trips. The distance was five miles and my brother usually went with me. To reach the town before the summer heat should melt the butter that we usually carried, we had to start early. A part of the way we followed an old lumbering road that wound about among the trunks of great pines that stood so close together that through their evergreen tops there seemed to struggle down only a "dim religious light." Occasionally through an opening there would shoot in a flood of sunshine bringing out in such strong relief the gray-brown of the rough bark on the great trunks of the trees. Now near, now distant, could be heard the muffled drumming of partridges. Overhead could be heard the "voices of the pines." I did not know that poets had sung of all these beauties in the woods, I simply knew that my heart was filled with a sort of subdued, quiet, mysterious happiness.

When a boy, I think I never longed for any one thing so much as for a gun. When twelve years old, father told me to wait until I was fourteen and he would get me one. It seemed as though those two years would never pass away. When visiting my line of traps along the Butternut creek, it was so aggravating to see so much game and not have a gun. I was finally allowed to cut five cords of wood and draw it to market with the "steers" and use the proceeds in buying a small shotgun. When I got the gun I started out into a "slashing" where I was fortunate enough to soon see a lot of nine quails sitting all bunched up together under a log. I fired and killed six. I was back home in twenty minutes with those quails. Proud? Well, I should say so. Oh, the long tramps I have taken with gun on my shoulder, coming home so tired that it seemed as though I could not put one foot ahead of the other,

yet, in three days, I would be off on another "hunt."

One great difficulty in my youth was the lack of opportunities to earn money. The first money that I earned to amount to anything was earned trapping. As soon as I had money to use I began buying books. This was after I had reached my teens. I always had a great desire to know the *reason of things*, to delve into mysteries, to know something about common things that everybody did not know, hence I had books on swimming, on trapping, on phrenology, physiognomy, mesmerism, physiology, etc., etc., etc. Of all the old books that mother had, I think none were studied with more interest than two on natural philosophy. It was this trait of mine that led me into learning shorthand.

At seventeen I began teaching school. I taught seven terms. I liked teaching very well but it was too trying on my "nerves." From the time I was eighteen until I was twenty-five I did a great deal of canvassing. I worked mostly at selling picture frames. I started out one day to try and take subscriptions for a paper that offered three splendid oil paintings as premiums. I worked hard all day without taking a subscription. Everybody said: "We have got more pictures now than we know what to do with. We will get some of those framed before we get any more." I took the hint. The next day I went to Flint and got some samples of mouldings and went over the same ground soliciting orders for frames to be delivered. The first day I took orders for \$15.00 worth of work. I worked at this for three years. I doubt if there is a road in this county that I have not traveled. This kind of work is a great school for a young man.

When nineteen I was teaching school one winter and "boarding round." I came across *King's Bee-Keepers' Text Book*. Here was a new mystery—one of those things that I delighted to revel in. Upon inquiry I learned that the owner had bees down cellar. We went right down to see how they were wintering. The next summer I passed three days, while on a canvassing tour, at the house of this friend. It was in swarming time. The enthusiastic part of my nature was roused to a pitch that I think it never before had reached. I began studying bee-keeping in real earnest. Every bee-keeper was questioned; every scrap of information that could be found in papers was pasted into a scrap book.

But I am getting a little ahead of my story. When about sixteen, I constructed a turning lathe and engaged in the manufacture of the old fashioned spinning wheels and reels, peddling them about the country. The introduction of woolen factories spoiled this industry. When I was about twenty, as I was peddling out the last load, I made a sale to a farmer living sixteen miles from my home. After making the sale, I begged to be allowed to stay all night, although it was then only three or four in the afternoon. I had discovered a row of brightly painted hives in the rear of the house and I wanted to "talk bees." I stayed. In a few months I went there again to "talk bees" and I stayed two days. I kept going to "talk bees" until finally the age of twenty-two found me "talking love" to Miss May Simpson, the farmer's only daughter.

Two happy years of courtship ended in a marriage that has proved all I ever hoped or dreamed. During those two years I several times walked those sixteen miles to see "my girl." I walked to save livery hire. Had the lady of my choice known how thoroughly accustomed I was to "tramping" perhaps she would not have felt quite so proud of the fact that "her young man" thought enough of her to walk sixteen miles to bask in her smiles. Before we were married I built, with my own hands, a small house on my father's farm. I can remember yet the snatches of some love song that I sang softly to myself while doing some particular piece of work on what was our future home for thirteen years.

The next year after we were married I began bee-keeping with four colonies. Oh, the enthusiasm of that first year with the bees! I think that I learned to recognize every comb in my little apiary. The bees were in the American hive. The bodies were painted white and then "marblized" by moving a smoking lamp under the paint while it was fresh. Each cap was painted a different color. The hives stood four feet apart in a row. On the south of each hive were planted three or four sunflowers for shade. The marblized hives with their different colored covers nestling in under the green leaves of the sunflowers surmounted with their great yellow blossoms formed a picture that will ever linger in the memory.

To a distance of six feet in front of the hives the turf was removed *a la* Boardman.

Every few mornings I swept the ground in front of the hives with a broom. I did this early in the morning for I really didn't want to be laughed at about it. I made \$60.00 profit from the bees that season.

When I finally embarked in the queen trade I had to go two miles each day to the post office, but my way lay across fields, through woodsy paths and down shady lanes, with blackberries fringing the fences. How I did enjoy my own quiet thoughts tramping those four miles each day as evening was coming on. When coming home I could usually see three little "figures" sitting on the fence, and then a moment later they would hop off and faintly would come to my ears the words: "Papa is coming." Then I would hear a clatter of little shoes on the hard road and see brown curls flying in the wind as the "little figures" ran to meet me. As I approached home I had a certain tune to whistle if I should be a little late and the girls could not see me. When they heard that tune they knew I was coming and would run to meet me.

How did I come to start the REVIEW? Well, as I advanced in knowledge of bee-keeping, I was often struck with the amount of matter that was published from which it seemed there was little information to be extracted. Mr. Heddon and myself often talked the matter over in regard to the amount of reading necessary to get a little *real* information. He often said if some one would only get up a journal containing extracts from all the other journals he would give more for this journal than for all of them combined, providing the right man was doing the reviewing. At this time I was also reading the *Rural New Yorker*. It occasionally gave special numbers just the same as the REVIEW has been doing. From these sources came the idea of making the REVIEW what it is. For at least three or four years before beginning the publication of the REVIEW I had its publication in mind and was planning for the work. Owing to the poor seasons and sickness that have come since the REVIEW was started, I have seen many times when it seemed as though I had come up squarely against a stone wall, but I kept on going, and at last the stones would tumble this way and that and I would go on again.

What are my latest recollections? They are of a four-months-old, golden haired, violet-gray-eyed baby, that kicks, laughs and crows on my knee. I think there is

nothing so warms a man's heart as his baby's smile.

There, friends, you know something what kind of a boy and man your editor has been. I have told you things about him that have never been told before.

EXTRACTED.

How to Successfully Publish a Journal.

I don't know whether any of the brethren are thinking of starting a new bee journal the coming year; if they are, here is a bit of advice from the editor of that phenomenal success in the journalistic field, the *Ladies' Home Journal*. He says:—

"Success in the periodical field lies, principally, in two or three things: 1—Publish a magazine that the public wants. 2—Secure the best talent obtainable in every department, particularly a skillful editor, and a publisher with good judgement. 3—Then, by judicious advertising, let the people know that you exist. Is that all? No, not exactly, but the other necessities will make themselves apparent to you as you go along. The above three rules are good ones with which to start, and, perhaps, for some time, you will not care for any others. They look simpler than they are."

• • •

Why There Will Never be any Comb Honey Made by Feeding Glucose.

Since the sugar-honey discussion began some have expressed fears that glucose would be used in the same way as sugar has been advised.

There are two reasons why this will never be done. One is that bees will not take the stuff unless it is largely mixed with honey. The other reason is that a syrup of cane sugar costs no more, if it does as much, as glucose. *Gleanings* has a most excellent editorial on this subject. It reads as follows:—

"It has been intimated several times of late that bee keepers feed glucose to bees to get comb honey. We have all along doubted whether this would be practicable, and accordingly, during the past summer, we ordered a small keg of the finest glucose made, to test the matter for ourselves. We knew the bees would not take to it very kindly, but were greatly surprised to find that we could not get them to even *smell* of it; and Mr. J. B. Hains, of Bedford, Ohio, who wished to prove the fallacy of the thing, says this is his experience. We experimented with three colonies of different temperaments, and they all seemed alike to regard

it with the same disfavor. Finally we thought we would see, one day, if we could not *force* it down 'em. We dipped our finger into it, and allowed the glucose to stream all over the cluster of bees; and while we were watching them they did not even take the pains to lick each other off, and we believe, if we had dosed them much more, the whole colony would have been killed.

When the stuff first came we thought we would sample it. It looked beautiful, clear as crystal, and as thick as nice well-ripened honey on a winter day. We sampled it, taking a good big spoonful. The first sensation was not particularly bad; but as the stuff began to melt in the mouth it was almost nauseating. It reminded us very forcibly of old rotten potato parings. (We never eat such things, but judge of their quality by the smell.) We invited, in turn, several others to taste it, and they all regarded it as positively bad.

Now, the point of all this is right here: If it is impossible to make bees take pure glucose of the finest quality, it is impossible to produce pure glucose comb honey by feeding; and all the talk we have had regarding the possibility of making glucose comb honey is a waste of words—that is, if our experiments were conducted carefully. This is possible, and, we fear, may be done: Twenty or thirty per cent of glucose may be added to honey, and fed to bees; but the pure article never.

Again, the nasty flavor of glucose is so characteristic that we believe we could detect the smallest quantity of it in honey, either comb or extracted. We believe we would about as soon rely on a carefully educated taste as on an elaborate analysis. Both together ought to be accepted as good proof of the purity or impurity of honey.

We want to give, right here, fair warning that those chaps who are adulterating with glucose, or contemplate doing so, had better go slow. In the first place, it is impracticable—yes, impossible—to get pure glucose comb honey. In the second place, 25 to 50 per cent mixtures will tell their own tale.

LATER.—Since writing the above we have had the pleasure of a visit from John H. Larrabee, lately of the Michigan Apicultural Experiment Station, at Lansing. In consequence of his connection with the station he has, of course, made many experiments in apiculture; and among them was feeding pure glucose and glucose mixtures to bees. The pure corn syrup, the bees almost refused to take, although by starving them to it he has got them to store in a very few cells. Practically, then, his experiment would agree with ours mentioned above. By putting from 25 to 50 per cent of glucose into sugar syrup or honey he could get them to take it down."

There is one point in the above to which I would like to call especial attention, and that is where the editor says that he would as soon rely on an educated taste as on chemical analysis to detect the presence of glucose in honey. I agree with him most

perfectly. Several years ago I tried mixing glucose with honey in an experimental way. I tried using one-fifth glucose; one-third; one-half; and two-thirds. Why did I do this? Well, so much was said about the adulteration of honey with glucose that I wished to know from actual experience exactly how honey mixed with glucose looked and tasted, and to see if it were really true that the glucose would prevent the honey from granulating. I learned that the mixture must be at least three-fourths glucose to prevent granulation. But to the point: I think that I could detect the addition to honey of even ten per cent of glucose. I think that any one who had had experience in the matter could do the same. By the way, it is not so much the matter of taste as it is that of the *feeling* in the mouth. There is a peculiar, sticky, gluey feeling. The taste comes *after* the substance has passed from the mouth. Then there is a sort of brackish taste that lingers quite awhile. Last summer Prof. Wiley ridiculed the idea of Mr. Muth trusting more to his (Muth's) taste than to the results of chemical analysis to determine in regard to the purity of honey. I would sooner trust Mr. Muth's taste than a chemical analysis. No adulterater would ever stop with so small an amount of glucose that it could not be detected. The difficulty here is that the public has not been educated to detect this peculiar taste and ascribe it to its proper source.

The New Crane Smoker and Its Points of Superiority.

Last July and August the subject of smoke and smokers had a thorough discussion in the REVIEW, yet so difficult is it sometimes to understand the workings and advantages of a new and slightly complicated instrument from simply seeing a description and illustration that even the editor of *Gleanings* did not fully understand the good points of the Crane smoker until he had seen one of the implements. When Mr. Crane sent him a smoker he also sent an article describing its good points. This article appears in *Gleanings* together with two illustrations. As I look upon the smoker as the most important implement in the apiary, and believe that the principle upon which the Crane smoker is made is the one that will eventually give us the best smoker, I take pleasure in copying Mr. Crane's article and the edi-

torial comments on the smoker. I made a few slight changes in the wording to accommodate the article to a cut that I had of the Crane smoker:

" For many years I have felt that there was need of a better smoker than any now offered in our bee journals. Broken springs, burned bellows leather, clogged blast-tubes, burnt clothing from sparks that escaped from the base of the fire-barrel, a large hive containing a good colony of bees burned up, the scarred trunk and limbs of an apple tree beneath which it stood, and, above all, the constant feeling that followed me that I ought to get a larger supply of smoke with a stronger blast for the effort I made, set me to thinking whether a better smoker could not be made. As the smoker is the most important tool of the apiarist, it is very desirable to have it as near perfect as possible. Even if it costs a little more at first, the time saved will soon pay the difference. Not only do we want an instrument that will not easily get out of repair and scatter sparks, but we want one that will give a large or small volume of smoke at will.

Some years ago I constructed a smoker with two leather valves, the upper one placed in the mouth of a wooden air-flue connecting with the base of the fire-barrel. While this smoker seemed to give me more smoke, and a stronger blast, than any other I had seen, it did not fully satisfy me. Having to make some new ones last winter, I began anew to study the whole question, giving it more time and thought than I had before been able to do. I made a great variety of valves and connecting-flues. What I wanted was a smoker easy to operate, that would not readily clog with soot or creosote, or get out of repair, and that would give the strongest blast and volume of smoke possible. The results of my efforts are before you.

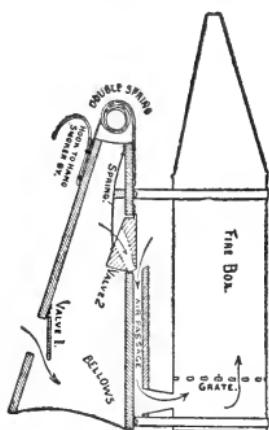
A 3-inch barrel is fastened to a 6x8 inch bellows, by two pieces of $\frac{1}{2}$ -inch hoop iron. Each piece is bent about $\frac{1}{2}$ way around the barrel, and fastened by wire, and then bent at such an angle as to give the greatest strength, and then bolted to the bellows. The bellows springs are on the outside, one on each side of the bellows, and fastened by metal clasps, and can be removed at will, and made stronger or weaker to fit the hand of the operator. They are so made that it may be said that they will neither break nor wear out. For my own use I fasten a hook to the small end of the bellows between the springs to hang the smoker to the edge of the hive while at work, and find it very convenient.

To secure the strongest blast of air through the fire-barrel, filled with all sorts of combustible material, and, perhaps, a layer of ashes and spent fuel upon the grate, it is necessary to have a closed air-flue between the bellows and base of the fire-barrel. But if we connect with a metal tube, large quantities of smoke and sparks will be drawn into the bellows when it opens, and that will soon ruin it, besides causing the fire to go out unless the bellows is kept in constant motion. There appear to be only two ways of getting

around the difficulty: Either we must use a blast-tube partly or wholly cut off, which does not entirely prevent smoke and sparks from being drawn into the bellows, and, besides, appears to weaken the blast, and permits sparks to drop upon the operator or hive-packing; or we must place a valve in this blast-tube, or air-flue, in such a way that it will open when the bellows closes, forming with the air-flue a closed passage from the bellows to the fire-barrel, and then instantly close to prevent smoke being drawn into the bellows.

SECTIONAL VIEW OF CRANE SMOKER.

An illustration of this principle is seen in the diagram. The slightest pressure upon the bellows opens the valve near the center of the bellows, and, with the air-flue forms a



keep the fuel burning in good shape. This valve is hinged at one end, and plays loosely in the slot on either side of the mouth of the air-flue. That no air may escape around the valve, a piece of flexible leather is stretched across the valve on the inside of the bellows with a hole through it opening into the

The grate is so constructed that, with the strong blast, I have had no trouble with ashes or sparks coming down into the air-flue. The diagram makes the working of this smoker so plain that I need not explain further. Its advantages must be evident to any experienced bee keeper. It will be seen that no smoke or sparks can be drawn into the bellows, nor can any sparks drop or fly from the base of the fire-barrel into the clothes of the operator nor into the packing of the hive.

I have not been troubled with any creosote—that sticky, tarlike substance that, in most smokers, runs down the sides of the smoker and over your hands, not unfrequently soiling the sections. Almost any kind of fuel can be burned in this smoker after a fire is once started. My assistant told me that he worked my smoker for half an hour on nothing but green grass. I would not, however, recommend grass as the best fuel.

This smoker does not easily get choked with soot or creosote; yet, if in careless hands, or from long use, the air-flue or metal valve gets coated with soot it can be easily and quickly taken apart and thoroughly cleaned, so it will work as well as when new; and although so easily taken apart, when put together it is one of the strongest smokers made. The barrel can, in a moment, be taken off when worn out, and replaced with a new one.

More important than any thing else, so far as my experience goes, this smoker will throw a much larger volume of smoke with far greater force, with the same kind of fuel and the same effort, than any other smoker. It is not always necessary to use large quantities of smoke, nor desirable; but when you do want it, you are apt to want it very much; besides, one can work much more rapidly if he has an abundance of smoke in reserve, than without it, and time is money.

Some time ago I was at work opening a hive, when the bees became very angry, and declared war in earnest. I closed my eyes, took my smoker, and gave a few puffs of smoke about my person. On opening my eyes I could not see even into the hive I had open before me, so dense was the smoke. In a moment more the smoke drifted away and I was left to finish my work without interruption, and was master of the situation.

In this section it is rare that we have much honey to be gathered after basswood bloom; and in a poor season, like the past, almost every hive has to be fed to fit them for winter. How much, can be told only by careful examination, as bees are mostly in large hives, and weighing them is impracticable. Heretofore I have found it very difficult to look them over until cool weather, on account of robbing. This year I looked over a number of yards of bees; and although the weather was warm most of the time, and robbers very abundant, I lifted almost every comb in every hive without any serious trouble from robbing. In fact, I worked with as little fear from robbers as I usually do in a good flow of honey. An assistant with a good smoker in hand made robbing an unequal game; and after trying it for two or three hours each day they would usually give it up. Perhaps the kind of fuel had something to do with it. I used old cotton and burlap cloths that had been used over the brood-frames, and gnawed by the bees until worthless. I will say, just here, that there is reason to believe that propolis-coated rags or cloths are the very best materials for smoker fuel to be had. They will last longer than anything else I have tried. The smoke will not stain the whitest section, as I have found clear wood smoke will do.

It has a pleasant odor, and is less offensive than any other smoke; and, more important still, this smoke will quiet the bees quicker and more perfectly than any I have heretofore used. But to use such old rags to the best advantage requires a smoker with a strong blast; for, as soon as the propolis warms and softens, the rags are apt to settle together and prevent the air from passing through the smoker.

From what I have written, it may seem as though I were somewhat enthusiastic over the good qualities of *my smoker*; but I have little fear but that any other bee keeper who has many colonies of bees to handle, who may give it a fair trial, will be equally enthusiastic in its praise.

J. E. CRANE.

MIDDLEBURY, Vt., Oct. 22.

[When the Crane smoker was first illustrated and described in the BEE-KEEPERS' REVIEW, we were prejudiced against it, because, up to that time, all arrangements in bee-smokers for preventing smoke from going into the bellows by means of a valve connected to a continuous flue to the firebox, had proved to be complicated, and a failure. But as Mr. Hutchinson spoke highly of it we were open to conviction, and soon after wrote to Mr. Crane, asking him to send on one of his smokers, which he did. We were delighted with it at once; and then we saw that it was difficult to understand the real principle without seeing the implement itself. But we trust that the painstaking care we have given to the new engravings will enable our readers to catch the idea. Perhaps we should add that the little valve, just the moment the bellows is compressed, swings out, making a continuous canal or flue to the smoker-cup; and as long as the pressure is exerted upon the bellows, the air can shoot on uninterruptedly into the opening, but just the *instant* it is released, and long before the suction of air backward can take place, the little valve swings back, in obedience to a little spring, effectually preventing any return of air or smoke into the bellows. It is impossible for smoke to come in contact with the valve, and hence it will remain clean. In the month or so we have used it, the valves have been perfectly clear of creosote accumulations.

In our opinion, there is no smoker that has ever been produced that will yield the volume of smoke that this will; and for blast it is fully equal to the Clark. The only trouble we see with it is, that the shut-off-valve device must be made mechanically perfect; and while ours have worked for us a month very nicely, it is possible that, in a year or so of time it might give trouble.

LATER.—Since the above was written, the smoker got a little wet; the wood swelled, and stopped the valve. This part of the smoker might be made of metal; but this would make it quite expensive.

We omitted to state that Mr. Crane has a cone, or sleeve, of perforated metal, that slips right over the cone top of the smoker. This sleeve has an air-space between it and the cone proper, and, being fastened securely, the top may be removed without burning the fingers.

The Punics Great Defenders of Their Home but Equally Great at Robbing the Homes of Others.

It is very evident from the majority of reports that the Punic bees (so-called) are not the bees for this country, and if all the

journals would truthfully show them up, no more bee keepers would be so foolish as to introduce them into their yards. Here is the latest report of them taken from the editorial columns of *Gleanings*:

"Some of our friends may be interested in knowing how these Punics are behaving of late. We have been watching them narrowly ever since our first reports. Regarding their bad traits, we have nothing to take back, but, on the contrary, we are sure that we did not condemn them any too severely. But among all their naughty habits it would be a little singular if we did not discover at least *some* partially redeeming quality. Well, we have found one. They are the best defenders of their home against robbers, of any race of bees we have ever known. Indeed, when the robbers are the worst, we find we can pull the cover off their hive and leave their combs exposed for hours 't a time; and although the robbers will at first pounce on them fiercely, in a few minutes they begin to find they have 'got the wrong pig by the ears,' and then they hover about more cautiously. Those 'little black devils,' as one of the boys calls them, will stand in military array along the edge of the top-bars; and the *first* robber bee that comes within smelling distance will be met on the wing, and perhaps jerked down between the combs, and that is the last of Mr. Robber, for two or three Punics will soon finish him up. Our experiments were made somewhat late in the season; but we believe it would be safe to move the cover off at any time of the year, if the hive is well shaded. This trait is a very desirable one, but at the same time it is overbalanced by so many bad ones, that, if all Punics are as naughty as ours (and reports seem to show it), bee keepers having them will soon brimstone them. We might add, in this connection, that this same skill in defending their home renders them terrific robbers, for no ordinary bee is a match for a Punic in a hand-to-hand combat. One time last summer, when the bees got to robbing, we noticed that there were two Punics to one Italian helping themselves to the ill-gotten gains; and this, notwithstanding there were 200 times as many of the yellow bees as of the black in the apiary. Suppose the situation were reversed, and the honey-house door should be left open—what then?"

The Solar Wax Extractor is Just the Thing for Rendering Cappings, but Old Combs Need Soaking and Boiling.

The solar wax extractor has received extravagant praise, but it seems that not every one can make it a success in all cases, as witness the following which W. H. Somerford sends to *Gleanings*:

Friend E. R. Root:—After carefully reading H. R. Boardman's report on page 771, Oct. 15, in regard to the slumgum, or residue,

from a solar wax extractor having no wax left in it, I will back your assertion by giving my experience concerning solar wax extractors, for I used a large one in Cuba, where the sun does shine even hotter than here. The size of it was 26x44 inches, and for melting cappings it was good enough; but when it came to melting up old foul-brood combs, or any other comb that had been used in the brood-chamber, it was not what I wanted, for it would always leave from 25 to 40 per cent of the wax in the slumgum, or so much that a hired man did all, or nearly all, of his cooking with it while it was in constant use. And some piles of the same slumgum from the solar extractor had been thrown out, and had been in the weather for perhaps as long as three or four years, until it had been burrowed through by ants, and soaked by rain, and heated by sunshine until the time I took it up and cooked it in a 300-gallon brass sugar-kettle; and, to be sure, I secured a fine lot of very good dark wax that the solar extractor had lost in slumgum. In fact, I consider, after using a 300-gallon brass kettle to render over a ton of wax in, that any solar extractor is very wasteful, except in cappings: for experience has taught me that, to get wax out of old combs, they must be soaked thoroughly, then boiled, and stirred and skimmed of all floating wax, then stirred and left to simmer down and cool. When cool, and soaked on top, take the cake out and set it up edgewise; then with a sharp hatchet or ax peel off or divide the cake as near the top as you find little round shot-like lumps of wax. When divided, break up, resoak, and again boil the half containing wax, with *acid*; and what is lost I'll guarantee will not be sufficient to run a thresher-boiler, as Mr. Boardman did, in place of coal."

* * *

The Future of Bee-Keeping.

Mr. C. H. Dibbern has seen many years of the ups and downs of bee-keeping and he sends to the *Western Plowman* his views of what bee-keepers may expect in the future. The A. B. J. copies some of the paragraphs

from his article and they are so appropriate for this issue of the REVIEW that I copy them.

"What about the future of bee-keeping? It is true the last few years have been rather poor over a part of our country, and no doubt many have become discouraged, and turned to something else. There has been plenty of hard work, and great fortunes have not been made, and yet the future is bright with promise. The seasons certainly will not always fail, and the 'good old years' will surely come again, when 'the fields will laugh with a harvest.'

The bee-keepers who have studied the various problems of the business, have learned much during the last few years that will be turned to some account hereafter. In our locality there is no reason why the seasons should not be as good as they used to be. In fact, there are many reasons why they should be better. More land is being used for pasture year after year, giving the white clover a chance. Alsike clover is also being cultivated to some extent, and sweet clover has 'come to stay' in all the out-of-the-way nooks and corners. More basswood and honey-locusts are growing up than are being cut down, and yet the last few seasons have been poor for some cause. Climatic causes have had more to do with these failures than any other one thing.

We believe it was the late M. Quinby who said: 'Get the bees, and at sometime every year they will furnish the honey.' That has not proved true in late years. For several years we had hives overflowing with bees all summer, only to be obliged to feed them up in the fall for winter. But all this will be changed again. Those who stick to the business through thick and thin are the ones who will succeed.

Just now some are anxious to get out of the business: others are going to California and other favored climes, and offering their bees at ridiculously low figures. This will be a good chance for some to get a start, and no doubt some one will take advantage of it. After more than 25 years' experience we know of no other industry that offers so many opportunities to a poor man as bee-keeping to get a start in life."

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